Canada Alberta

FOREST RESOURCE DEVELOPMENT AGREEMENT
ENTENTE SUR LA MISE EN VALEUR DES RESSOURCES FORESTIERES

Canada Alberta

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The Canada-Alberta Forest Resource Development Agreement is a subsidiary agreement of the Canada-Alberta Economic and Regional Development Agreement, which provides coordination and cooperation between the governments of Alberta and Canada in areas of Alberta's economic development.

The Canada-Alberta Forest Resource Development Agreement is funded equally by the governments of Canada and Alberta, from April 1, 1984, to March 31, 1989.

Its primary objectives are to ensure the long-term availability of timber supplies; to optimize timber uses; and to contribute to the growth and diversification of Alberta's economy.

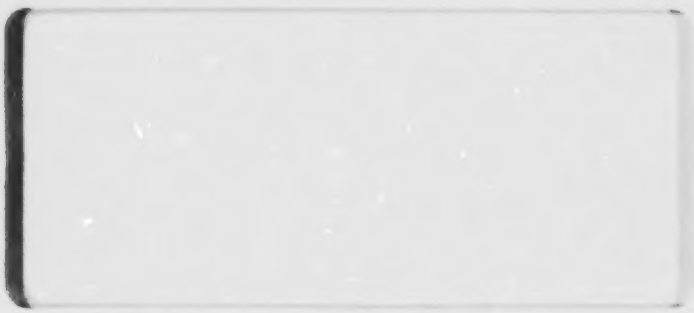
The Agreement comprises three programs: Reforestation; Applied research, technology transfer and opportunity identification; and Public information, evaluation and administration. These programs are managed by a joint Directorate and are implemented by the Canadian Forestry Service and the Alberta Forest Service.

L'Entente Canada-Alberta sur la mise en valeur des ressources forestières est auxiliaire à l'Entente Canads-Alberta sur le développement économique et régional, qui vise à assurer la coordination et la coopération des deux gouvernements relativement au développement économique de l'Alberta.

L'Entente Canada-Alberta sur la mise en valeur des ressources forestières est financée à parts égales par les gouvernements du Canada et de l'Alberta, et a cours du 1er avril 1984 au 31 mars 1989.

Ses objectifs principaux sont assurer la disponibilité à long terme de réserves de bois; optimiser leur utilisation; et contribuer à la croissance et la diversification de l'économie de la province.

L'Entente comprend trois programmes: Reboisement; Recherche appliquée, transferts de connaissances techniques et relevé des occasions; et Information, évaluation et administration. Ces programmes sont gérés par un Bureau de direction conjoint, et mis en oeuvre par le Service canadien des forêts et le Service forestier de l'Alberta.



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Resource Information Systems, Inc.
Annual Conference
Vancouver, British Columbia
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PACIFIC RIM MARKETS FOR FOREST PRODUCTS IN THE 1990S: ECONOMIC ASSESSMENT OF DEMAND & SUPPLY

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DISCLAIMER

The study on which this report is based was funded under the Canada-Alberta Forest Resource Development Agreement. The views, conclusions, and recommendation are those of the authors. The exclusion of certain manufactured products does not necessarily imply disapproval nor does the mention of other products necessarily imply endorsement by the Canadian Forestry Service or the Alberta Forest Service.

ABSTRACT

The countries of the Pacific Rim are increasingly becoming dominant economic players in the world forest products market. In this area, dynamic changes in both the demand and supply of forest products are occurring.

These countries are expected to provide strong growth in the demand for paper and paperboard products with China and the NICs showing the most promising potential. With regards to all solid wood products, demand in the Pacific Rim is expected to rise. Furthermore, an increase in consumption and imports of softwood logs are expected to stem from Japan, China and Korea in the 1990s.

With regards to timber and softwood lumber supply, Chile, New Zealand, Japan and Australia could emerge as dominant players in the late 1990s as the plantations in these countries mature. On the North American coast, however, constant or slightly declining timber supplies may occur in the 1990s. Indonesia will continue to rise as a major supplier of both lumber and panels in the 1990s. Moreover, Argentina will become an dominant supplier of paper products as it doubles it production capacity by 1995. Finally, North America will continue to be a strong supplier of kraftliner to Japan and the other far eastern countries in the 1990s.

Finally, a modest slow down in the U.S. economy is anticipated in 1989-1990 which will cause a decline in housing starts and lumber consumption in North America. However, as the U.S. economy regains strength in the early 1990s so will growth in these areas. Production capacity of softwood lumber is forecasted to decline in the western U.S. and increase slightly in Canada and southern U.S.. Both demand and supply conditions in the North American panel market are expected to increase substantially except for softwood plywood. Finally, in the United States, softwood timber supplies will become tighter. However, as these species become increasingly utilized in panel and paper products, both the demand and supply conditions for hardwood timber will expand.

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PACIFIC RIM MARKETS FOR FOREST PRODUCTS IN THE 1990s: ECONOMIC ASSESSMENT OF DEMAND & SUPPLY

Resource Information Systems, Inc.
Annual Conference
Vancouver, British Columbia
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INTRODUCTION

This report summarizes the information presented at the annual Resource Information Systems, Inc. (RISI) conference held from October 20 to 23, 1987 in Vancouver, B.C.. RISI is a consulting firm which provides detailed economic statistics on the international forest products industry. This information includes historical data, written analyses, and quantitative forecasts. This report discusses three main topics: (1) Economic assessment of forest products demand in the Pacific Rim; (2) Sources of supply for Pacific Rim forest products markets and; (3) An outlook of the North American housing and solid wood products industry.

SESSION I: ECONOMIC ASSESMENT OF FOREST PRODUCTS DEMAND IN THE PACIFIC RIM.

Macroeconomic Considerations: Industrial development policies and exchange rates.

Johan Veltkamp
President
RISI

Introduction:

This presentation set the stage for this years conference. The future potential of forest products trade in the Pacific Rim Basin rests upon several macroeconomic factors that need to be considered. Thus, the objective of this presentation was to: (1) raise some questions; (2) discuss a model of national development; (3) offer some considerations; (4) present some opinions; and (5) venture some prognostications.

Analysis:

Raise Some Questions: There are several important macroeconomic questions that must be raised and considered when trying to study and analyze the changing environment of the forest products sector in the Pacific Rim:

With regards to trade protectionism by the U.S., is the U.S. engaged in a new Vietnam-style war, but now in foreign trade with Germany, Japan, South Korea and Taiwan? In other words, is the U.S. using protectionist measures to level the foreign trade playing field with countries that are ironically all U.S. "ex-client states"?

Will Japan (and South Korea to a lesser extent) accelerate domestic consumption and housing investment in a shift away from exports? Also, will mainland China's development growth continue to expand along its rapid path of 10-15%/year or will it subside? Furthermore, will China "escape" Marxism; and for that matter will Russia and Eastern Europe? An affirmative answer to these questions will most likely fuel a boom in Pacific Rim forest products trade in the 1990s.

Some other important questions are: Will the Philippines enter chaos?; Will Malaysia and Indonesia escape from mainly exporting crude oil and cash crop commodities or will they follow Japan's and the four Dragons' example of targeting export industries such as forest products? Is China likely to follow the strategies of New Zealand, Brazil and Chile by targeting forestry? Finally, will New Zealand, Chile and Australia accelerate tree planting? Answers to these questions will determine how active competition in the Pacific Rim forest products markets will become in the future.

A final question is: Will demand for forest products outside North America grow faster than supply, or will the converse prevail? In other words, will external demand for forest products from the U.S. and Canadian west coast timber, wood and pulp and paper industries increase or decrease?

A Model of Economic Development: A economic development model was established in order to understand the influence of economic development policies on the potential of the Pacific Rim market. This model is outlined in Table 1. This model consists of four stages of economic development with each stage being characterized by five dimensions: political system, economic system, capital flows, trade flows, and exchange rates. Stage I characterizes countries such as Africa & India. Stage II characterizes Russia and China and the middle class developing countries (i.e.,Latin America). Stage III characterizes countries such as Japan and Mexico. Finally, the U.S. is the prime example of Stage IV. The stages and dimensions of the model are not discussed any further but are used to address the following topics of this presentation.

Some Considerations: Japan's economic development strategies, which are characterized by Stage III of the model in Table 1, have obviously been successful to date. Nevertheless, the failure or continued success of the Japanese model is likely to determine whether other countries will follow Japan's strategy. In particular, the other countries are the four Dragons (Taiwan, South Korea, Hong Kong and Singapore). Subsequently, countries such as Indonesia, Malaysia, Philippines and other S.E. Asian countries may follow as well. These latter four countries could target their forest products industry, where they have a natural and enduring comparative advantage, thus increasing the supply in the Pacific Rim.

The continued success of the Japanese model is still plaqued with uncertainty. Japanese society still remains insular despite Japan being a world class exporter and investor. Also, Japan does not enjoy goodwill in the world, especially not in Okinawa where Japan levies up to an 80% rice tax. Finally, Japan still remains dependent on commodity imports. However, the ease at which Japan absorbed the oil price shock in 1981 suggests that Japan's economy is strong and resilient; which is positive evidence supporting the Japanese model. Given this, the stage seems set for a strong and durable expansion of Japanese demand for housing and consumer goods.

TABLE 1

STAGES OF DEVELOPMENT

STAGE	POLITICAL SYSTEM	ECONOMIC SYSTEM	CAPITAL FLOWS	TRADE FLOWS	EXCHANGE RATES
I	FEUDAL OR COLONIAL (INCLUDING THE MARXIST VARIANT?) CLASS SOCIETY	SUBSISTENCE AGRICULTURE, FORESTRY SOME CASH CROPS COTTAGE INDUSTRY	SOMETIMES MINISCULE INFLOWS OFTEN NET OUTFLOWS	BARTER, BEADS FOR SPICES & SLAVES. COTTON FOR TEA. GUNS FOR SILK.	NOT APPLICABLE
II	AUTOCRACY: KINGS, EMPERORS, DICTATORS MIDDLE CLASS DEVELOPING	SUBSISTENCE AGRICULTURE NEGLECTED MORE CASH CROP AGRICULTURE COTTAGE INDUSTRIES IN DECLINE FACTORIES FOR SHOWCASE AND IMPORT SUBSTITUTION	SIZEABLE CAPITAL INFLOWS, OFTEN SQUANDERED	EXPORT AG. COMMODITIES FOR GOLD, SILVER, HARD CURRENCIES. BARTER FOR OIL, MILITARY EQUIPMENT.	DOMESTIC CURRENCIES OVERVALUED BY DESIGN FROM RULERS
III	DEMOCRACY: ONE-PARTY NATIONAL ARROGANCE CLEAR NATIONAL OBJECTIVES DREAMS OF DOMINANCE	AGRICULTURE KEPT FOR NATIONAL SECURITY. FOOD PRICES HIGH. EXPORT INDUSTRIES TARGETED AND HIGHLY DEVELOPED. HOUSING, WHOLESALE & RETAIL TRADE, SERVICES ALL UNDERDEVELOPED. POOR WELFARE PROVISIONS SAVING-INVESTMENT ORIENTATION	CAPITAL INFLOWS DURING TRANSITION. THEN CAPITAL OUTFLOWS, INITIALLY TO SERVICE DEBTS, THEN TO REPAY DEBTS, FINALLY TO MAKE "ECONOMIC CONQUESTS"	MOVING AWAY FROM COMMODITY EXPORTS VIA HEAVY INDUSTRIAL EXPORTS TO HIGHLY VALUE-ADDED GOODS EXPORTS IN TARGETED INDUSTRIES WHERE DECIDED COMPETITIVE ADVANTAGE HAS BEEN ACHIEVED THROUGH HEAVY INVESTMENT.	DOMESTIC CURRENCY UNDERVALUED BY CONSENSUS OF INDUSTRY, BANKS, GOVERNMENT.

IV	DEMOCRACY: TWO PARTIES OR MORE.
	NO CLEAR NATIONAL GOALS WISH FOR WELFARE SOCIETY
	MULTIPLE SPECIAL INTERESTS
	INTERNAL STRUGGLE BETWEEN STATE DIRIGISM AND FREE-MARKET SYSTEM
		MAJOR SECTORS OF ECONOMY IN DECLINE
		SERVICE INDUSTRIES,
		SOME KNOWLEDGE SECTORS,
		CONSUMER-ORIENTED SECTORS THRIVE
			FIRST CAPITAL INFLOWS TO FINANCE GAP BETWEEN SAVINGS AND CONSUMPTION.
			THEN EITHER
			1) INFLOWS USED TO FINANCE INVESTMENT WITH CONSUMPTION SUPPRESSED OR
			2) EXTERNAL DEBT RISES UNCONTROLLABLY AND IS SQUANDERED
			IF (1): RETURN TO CAPITAL OUTFLOW, WHILE STILL INVESTING.
			IF (2): FORCED CAPITAL OUTFLOW, DISINVESTMENT, DECLINE, DEBT REPUDIATION.
				THROWBACK TO AGRICULTURAL COMMODITY EXPORTS WHICH ARE SUBSIDIZED.
				EXPORT: HIGH-TECH GOODS, SERVICES, MILITARY GOODS.
				IMPORTS: MASS-PRODUCED, QUALITY, ESTABLISHED, INDUSTRIAL, CONSUMER AND CAPITAL GOODS.
					DOMESTIC CURRENCY IS FIRST OVERVALUED. THEN, EITHER SLIGHTLY UNDERVALUED OR SUBJECT TO CONTINUED FORCED DEVALUATIONS.

Some Opinions: From studying the world economy throughout the 1980s, it is believed that free markets have proven to be the most efficient conduits through which signals on the optimal allocation of labor, captial and R & D activity are transmitted. As a result, the following two axioms and a corollary are developed;
Axioms: (1) Political freedom is a prerequisite for economic freedom; (2) Economic freedom is a prerequisite for economic success.
Corollary: With economic freedom comes loss of absolute political power by the ruling elite. This leads to the question; Will China be successful and continue to grow? It is difficult to believe so since most "revolutions from above" have not been successful in the past and it is unlikely that marxism can become benign and efficient.

Prognostications: Based on the economic development model and the economic events of the 1980s, several prognostications can be made. First, in the United States the Democratic party will most likely gain the presidency in 1988. This suggests a likely increase in trade legislation as well as an increase in taxes. Since it is believed that this outcome is so well forecasted ahead by the financial markets, sufficient precautionary action can be taken to avoid an economic disaster. Consequently, continued expansion in world trade is expected.

Secondly, with regards to exchange rates, the economic development model suggests that the Japanese yen, Korean won, Taiwan, Hong Kong and Singapore dollars are all undervalued vis-a-vis the U.S. dollar when viewed in terms of external trade flows. As a result, it is predicted that these currencies will rise to correct trade surpluses, and as the development of their countries' political system progresses into the fourth stage of the model. However, in purchasing power parity terms, it is believed that these currencies are overvalued vis-a-vis the U.S. dollar. Consequently, this suggests that either prices in the U.S. will rise rapidly (inflation) or prices in surplus countries will fall (deflation). The outcome will depend on world growth but at the present it appears that international monetary and debt policies could cause the deflation scenario to prevail.

Thirdly, several prognostications regarding current and future development of various countries in the Pacific Rim can be made. The Japanese economy is in the transition between Stage III and IV. As an effective two-party system is established, consumers' interests will prevail thus balancing the economy. Consequently, we can expect a housing boom for many years. South Korea and the other Dragons will follow Japan's lead but at a distance. It is unlikely that China will convert to a market economy. As a result, economic growth will subdue and possibly come to a halt upon Deng's death. The Philippines will have a military dictator soon. Finally, Indonesia, Malaysia and other S.E. Asia countries will try to follow the Japanese model and target their forestry and forest products sector.

Finally, some prognostications regarding forest products in the Pacific Rim can be made. In the near term, the demand for timber is expected to be strong as Japan's housing industry booms and China maintains its economic growth. Timber demand in the medium term, however, will stabilize at high levels; China's decline in growth will be offset by a demand expansion in the four Dragons. The demand for pulp and paper is expected to be strong both in the short and long term as domestic consumption by Japan and the four Dragons increases.

In the near term timber supplies will remain tight and export log prices will be high. Furthermore, an increase of chip trade is expected from Chile, New Zealand and other countries in the near term. Finally, in the near term, a moderate expansion in pulp and paper capacity is expected. In the medium to long term (1995-2010), timber and chip supplies are expected to increase substantially from the U.S., Chile, New Zealand and Japan.

Conclusions:

The major growth for forest products consumption is predicted to stem from Japan and the four Dragons. Japan's transition into Stage IV of the economic development model will most likely be closely followed by the four Dragons. Consumption of forest products by China, on the other hand, will likely be subdued in the medium to long term as Marxism is impending to prevail. Finally, supply of forest products, including timber and chips, are expected to be strong in the medium and long term as well. This will stem from several countries but predominately from Indonesia, Malaysia and other S.E. Asia countries as they target their forest products sector and also from radiata pine plantations in Chile and New Zealand.

Paper and paper demand in the Pacific Rim.

Therese Feng, Economist,
Resource Information Systems Inc.

Introduction:

This presentation analyzed the current situation and future prospects of paper and paperboard demand of selected Pacific Rim countries to the year 2000. The following countries were reviewed in detail: Japan, China, the New Industrialized Countries and "other" Pacific Rim countries.

Analysis:

Japan: Currently, Japan's share of paper and paperboard demand of all Pacific Rim countries is approximately 46%. This country's paper demand growth has been averaging at 2.5%-3%/year. The strongest demand gains have been made in printing & writing paper as well as in tissue grades. The increase in printing & writing paper demand has stemmed primarily from the increase in per-capita income in Japan. The decline in other paper and paperboard products has been caused by a shift in the country's infrastructure from using less raw materials in industry to higher value-added industries. Also, products such as plastics have been increasingly substituting for paper packaging products. Japan's imports of paper and paperboard products are predicted to increase by 1.8 million metric tons by the year 2000 with the majority of the imports being commodity grades of paper.

China: This country's share of the total Pacific Rim paper and paperboard demand is about 22%. Paper and paperboard demand in China was increasing at a rate of 5%/year in the 1970s but rose to a brisk 9%/year in the early 1980s. The recent increase in demand has been fueled primarily by the economy's 6%-7%/year growth rate which was the result of an export expansion and increase in industrial production. The strongest gains in demand have been in the printing & writing and wrapping & packaging grades. These gains have been driven by the

changing educational system as well as by the increased production in the service sector.

Paper imports are expected to double by the year 2000 to a level of about 3 million metric tons. Pulp imports are also expected to rise dramatically. The expected import increases are primarily the result of three constraints facing the country's domestic industry: (1) insufficient fibre availability; (2) financing constraints for capacity expansion; and (3) there are a large number of small, inefficient mills that are unable to compete with foreign suppliers.

NIC: The Newly Industrialized Countries include Taiwan, South Korea, Hong Kong and Singapore. These countries' demand share of paper and paperboard of all Pacific Rim countries is 15%. Paper demand is expected to increase at a rate of 7%-8%/year to the year 2000 with printing & writing paper and tissue grades showing the strongest growth. This growth has been and is expected to continue to be fueled by the economies 6%-7%/year average growth rate. The growth in paper imports is expected to be modest thus the increasing demand will be supplied by domestic sources.

Other Pacific Rim Countries: Oceania and the other countries of the Pacific Rim account for the remaining 17% share of paper and paperboard demand in the Pacific Rim. However, the increase in demand from these countries is expected to be very modest to the year 2000 compared to Japan, China and the NICs.

Conclusions:

The Pacific Rim countries are expected to provide the strongest growth in demand for paper and paperboard products out of all regions of the world. Their share of demand is forecasted to increase from the 17% level in 1970 to 30% by 2000. The majority of this growth will be provided by China and the NICs. Import demands are also expected to increase substantially in all grades, except tissues, because of limited availability of capital and fiber resources in the domestic economies.

Lumber and panel demand in major Pacific Rim markets, 1970-2000

Bernard Fuller
Vice President, RISI

Introduction:

This presentation focused on the Pacific Rim countries as consumers of solid wood products. These countries have been one of the fastest growing regions of the world. The rising incomes, population and living standards of these economies have increased the demand for wood products in most end-uses; including residential construction, furniture, cabinets and other products and industrial uses such as packaging, pallets and crates. This presentation looked at consumption of softwood lumber, hardwood lumber, structural wood panels and interior wood panels in the Pacific Rim for the years 1970-2000.

Analysis:

Softwood Lumber: The United States' share of softwood lumber consumption of all Pacific Rim countries in the 1980s was 60%. This share is expected to remain

constant to the year 2000. Japan is the next largest consumer of softwood lumber in the Pacific Rim accounting for 17% of the total which is also expected to remain constant into the 1990s. Japan's share is expected to remain constant because of two reasons. First, the real price of lumber in Japan is expected to increase. Secondly, Japan's traditional construction techniques will continue to act as a non-tariff barrier against the style of softwood lumber produced in North America and other exporting countries. In order to penetrate the Japanese market, a lumber product suited to their living style must be developed and produced.

The fastest growth for softwood lumber consumption in the 1990s is expected to accrue from Taiwan, Korea and Mexico as well as China and Oceania. Softwood lumber domestic consumption in the Pacific Rim is expected to increase from the 1970 level of 143,804,000 CUM (cubic metres) to 194,503,000 CUM by the late 1990s.

Hardwood Lumber: The U.S. also accounts for the largest share of hardwood lumber consumption of all Pacific Rim countries which is 37%. This share is to remain fairly constant into the 1990s. Japan accounts for 24% of the hardwood lumber consumption share but this level is expected to drop to 10.6% by the 1990s. This is primarily the result of tightening tropical hardwood supplies. In contrast to consumption in Japan, S.E. Asia's share of hardwood lumber consumption was 13.2% in the 1970s and is expected to increase to about 24% by the year 2000.

Overall, the consumption of hardwood lumber in the Pacific Rim is expected to show modest growth into the 1990s. It is expected to increase from the 1970s level of 42,106,000 CUM to 44,750,000 CUM in the 1990s.

Structural Panels: The demand for plywood in the most developed plywood markets (Canada, United States & Oceania) is expected to decline in the 1990's because of (1) rising output prices, (2) declining quality of peeler logs, and (3) the increasing availability of structural nonveneered wood panel substitutes. The decline in plywood demand in these markets will be offset by the increase in demand for oriented strandboard (OSB)/waferboard products.

The decline in demand for plywood in North America and Oceania markets is mitigated by the increased consumption in less developed countries of the Pacific Rim such as China, S.E. Asia and Korea. These countries are highly dependent on plywood in appearance applications as well as for export earnings.

The consumption of structural panels is expected to increase from 30,638 MCUM (thousand cubic metres) in the 1980s to 42,477 MCUM in the 1990s (Figure 1) with OSB/waferboard capturing 30% of the structural panel market share compared to 7% in the 1980s.

"Interior Grade Panels": The domestic consumption of particleboard and fibreboard (medium density fibreboard (MDF) & hardboard) has and is expected to continue to increase substantially throughout the 1990s in all Pacific Rim countries (Figure 2). The primary factors developing this growth are (1) the strong suitability of these products for furniture, cabinetry, fixtures and other interior applications, (2) the low cost of manufacturing these products which is primarily due to their structural makeup of low cost waste-by-products, and (3) the ability to utilize 100% of the fibre in these products is attractive to resource poor nations such as China, Taiwan and Korea.

FIGURE 1

Structural Panel Demand (Plywood & OSB/Waferboard)
(Million Cubic Meters, Annual Averages)

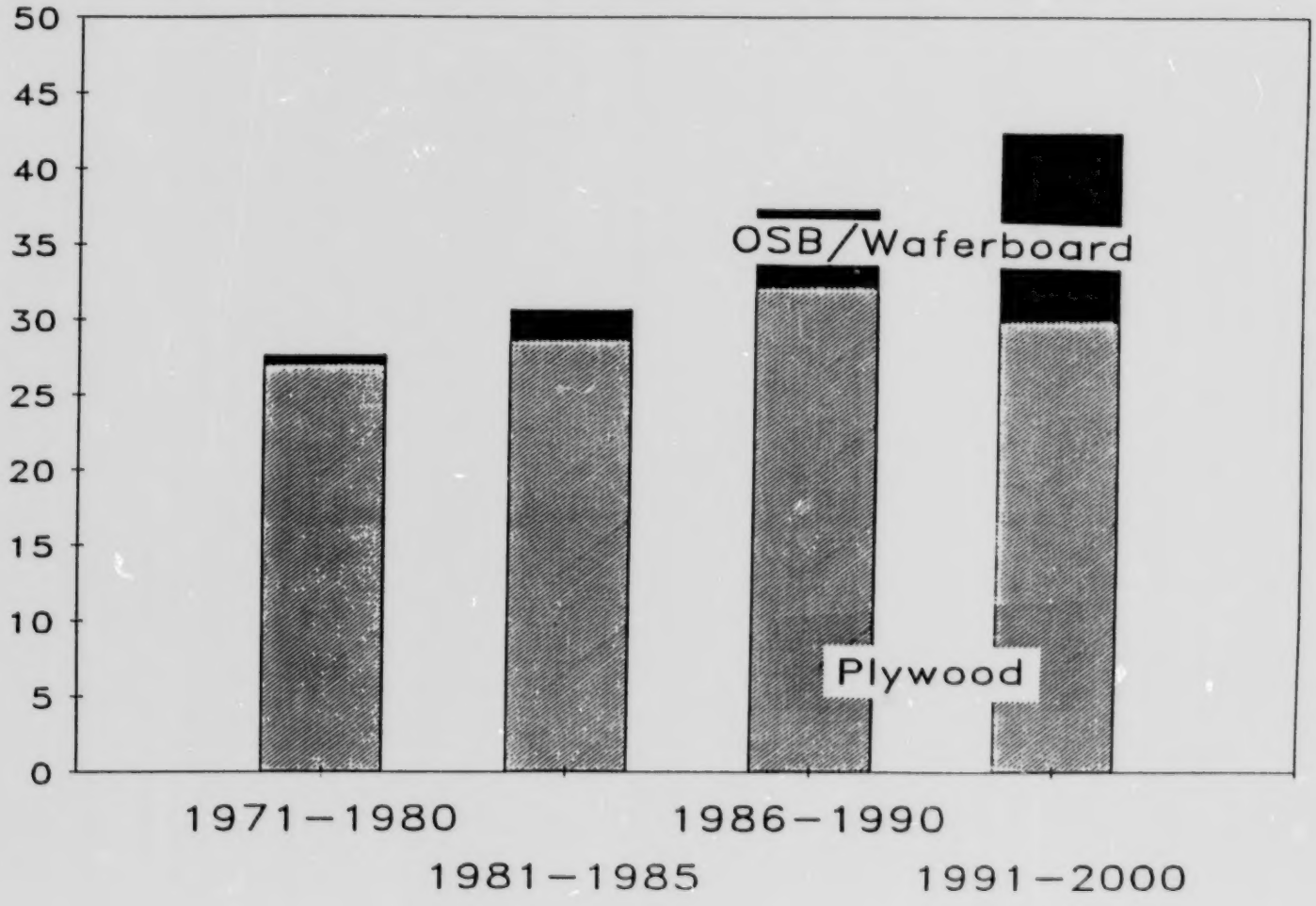

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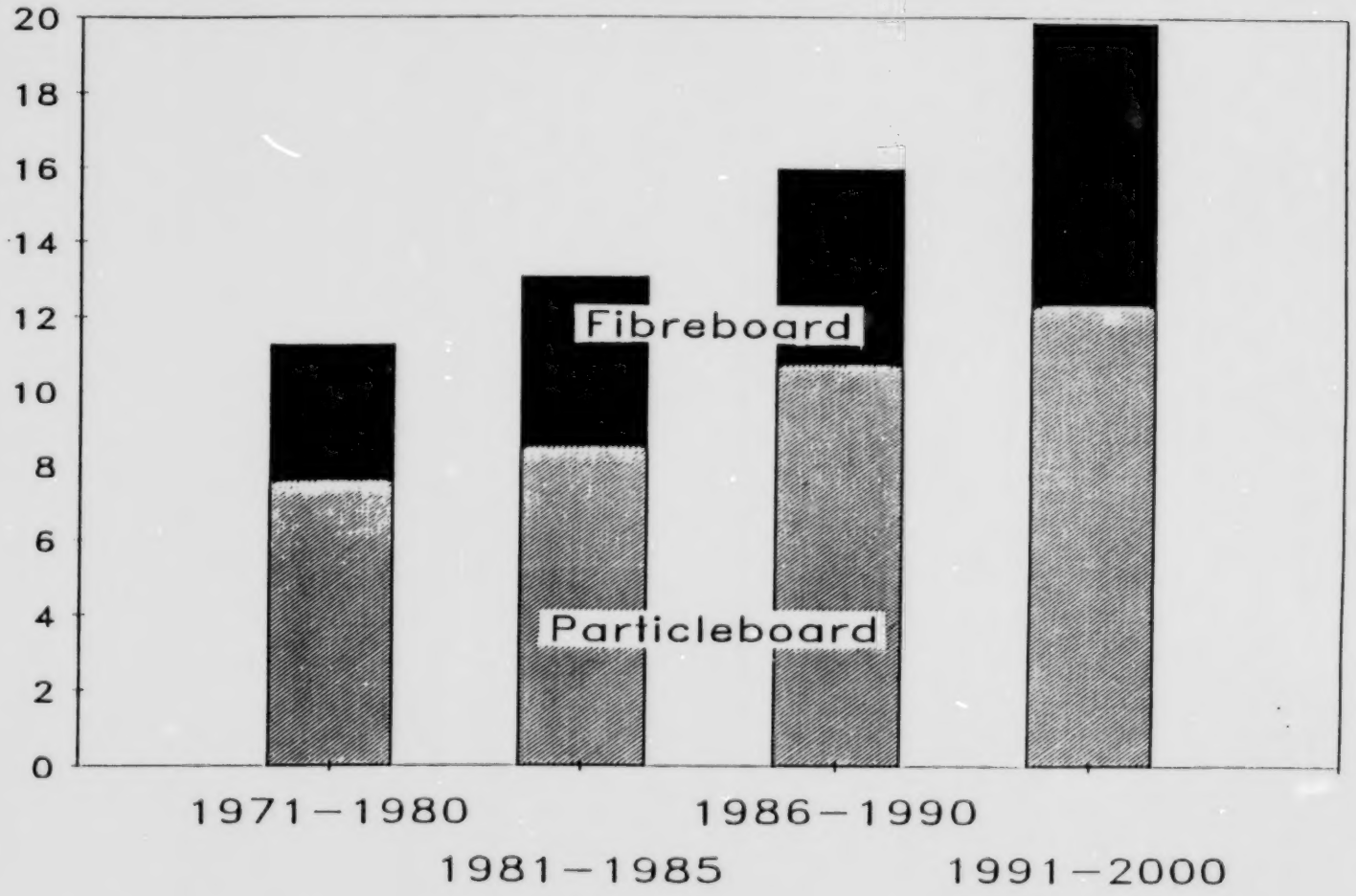
FIGURE 2

Particleboard & Fibreboard (MDF & Hardboard) Demand
(Million Cubic Meters, Annual Averages)



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The growth in consumption of MDF panels is expected to be the highest out of all the interior grade panels. S.E. Asia, China and Taiwan will account for the majority of this growth. Growth in particleboard consumption is also expected to be substantial, however not as rapid as MDF. Particleboard demand will expand fastest in S.E. Asia, Mexico, China and Korea. Of all the interior panels, the demand for hardboard is forecasted to grow the slowest. Overall, interior panel domestic demand in the Pacific Rim is expected to increase from the 13,084 MCUM level of the 1980s to 19,950 MCUM in the 1990s.

Conclusions:

The demand for wood products in the Pacific Rim is expected to increase into the 1990s primarily because of the rapid industrial expansion along the western edge of the Pacific Rim. Consumption of softwood lumber is forecasted to increase by 35% from 1970 to the 1990s. Hardwood lumber consumption is expected to rise only 6% over the same time period. Plywood consumption will increase 11% from 1970 to the 1990s whereas consumption of OSB/waferboard is expected to increase by a dramatic 1800% for the same period. This growth stems primarily from the North American and Oceania regions. The growth in consumption of particleboard and fibreboard (hardboard & MDF) is also expected to be substantial. A 62% increase in particleboard consumption over the 1970 to 2000 period is forecasted, whereas fibreboard consumption growth is expected to increase by 105% over the same period with MDF growth offsetting the decline in hardboard consumption.

Timber Demand

Keith Balter
Manager, Timber Services
Resource Information Systems Inc.

Introduction:

This presentation focused on the demand for softwood logs and softwood & hardwood lumber in Japan, China and Korea for the 1970 - 2000 period.

Analysis:

Japan: This country accounted for 60% of softwood log imports in the Pacific Rim (excluding U.S. and Canada) in 1985 which is down substantially from its 94% share in 1975. However, softwood log imports are expected to increase from the 14.5 MCUM level of the early 1980s to 21 MCUM in the 1990s. This is also reflected in the forecasts of Japan's lumber consumption which is expected to rise from the 31 MCUM level of the early 1980s to 38 MCUM in the 1990s. The increase in lumber demand will be supplied 45% by foreign logs (50% of which will come from the United States), 41% by domestic logs and 14% from lumber imports.

Future softwood lumber use in Japan is expected to increase because of (1) recent policy changes that favors housing; namely, lower mortgage rates, increase in funding programs, and the fact that a large number of land is occupied by high cost rice farmers that could be opened up for residential developments if correct policies were initiated, (2) a large segment of the population is at the age level at which they purchase their own homes, (3) a dramatic shift from hardwood to softwood because of the tightening fibre supplies in S.E. Asia, and (4) the decline in the amount of wood used per home

in the 1980s is expected to stabilize. However, this expected increase must be discounted because (1) more multifamilty homes are expected to be built which traditionally utilize less wood than the single-family home, and (2) the average size of home has been decreasing since 1982 thus the amount of lumber used per home has decreased.

China: The consumption of logs (softwood & hardwood) in China is forecasted to increase from its current level of 140-200 MCUM/year to 250 MCUM/year by the year 2000. This is primarily because of (1) the increasing population, (2) the continuation of people migrating to the city, and (3) the rapid industrial expansion. However, China's current annual production of logs exceeds the annual growth rate by as much as 35% leading to an intensification of their timber deficit. As a result, the demand for imported logs is expected to grow.

Log imports in China are expected to come from the traditional sources which are U.S., U.S.S.R., Chile, Canada, Brazil and S.E. Asia. However, China's preference to make purchases by barter rather than currency may affect some suppliers (i.e., U.S. and Canada). China will demand logs over lumber because of their relatively cheap and abundant labor endowments for manufacturing purposes.

Korea: Recently, this country has had a surge in economic growth primarily from the construction activity created for the 1988 summer Olympics; however, a lull in activity will result immediately after then eventually leading to a steady growth rate into the 1990s. This, combined with unambitious plans by the government in the construction industry, will result in a very modest growth of log consumption.

Conclusions:

Total softwood log exports to the Pacific Rim from the U.S. West Coast are expected to increase from 2.7 BBF (billion board feet) in 1986 to 3.7 BBF in 2000 (Figure 3). Japan's log imports from the Pacific Northwest are expected to increase substantially in the near future (1989) eventually leveling off in the late 1990s. Also, imports by China from the Pacific Northwest should increase at a steady rate throughout the 1990s. Finally, Korea's softwood log imports are expected to increase at a modest rate into the 1990s.

The Dollar's Decline: The Two Edged Sword

Dr. Lynn Michaelis
Chief Economist
Weyerhaeuser Co.

Introduction:

In 1980, the United States' real net exports ($1982) peaked at almost $60 billion dollars (Figure 4). Since then, the U.S.'s real net exports have declined dramatically, reaching a deficit of about 145 billion dollars in 1986. To correct this imbalance, there has been a substantial devaluation of the U.S. dollar vis-a-vis the Japanese yen and German mark. Unfortunately, however, to date the devalued dollar has not reversed the U.S.'s enormous trade deficit.

Consequently, this presentation focused on some of the economic factors that have stimulated the U.S. trade deficit. Also, the basic theory explaining

FIGURE 3

U.S. West Coast Softwood Log Exports by Destination

—Billion Board Feet—

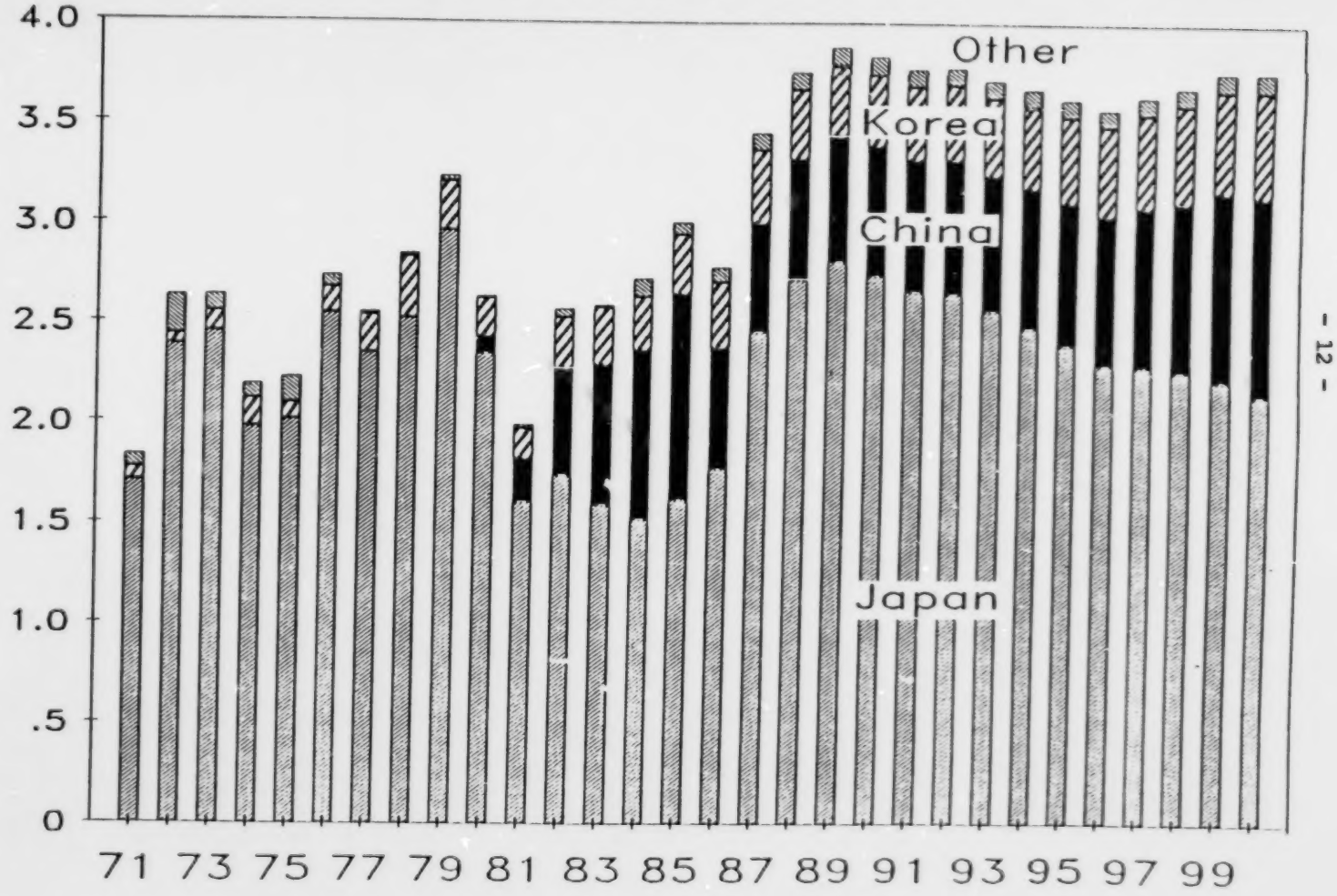
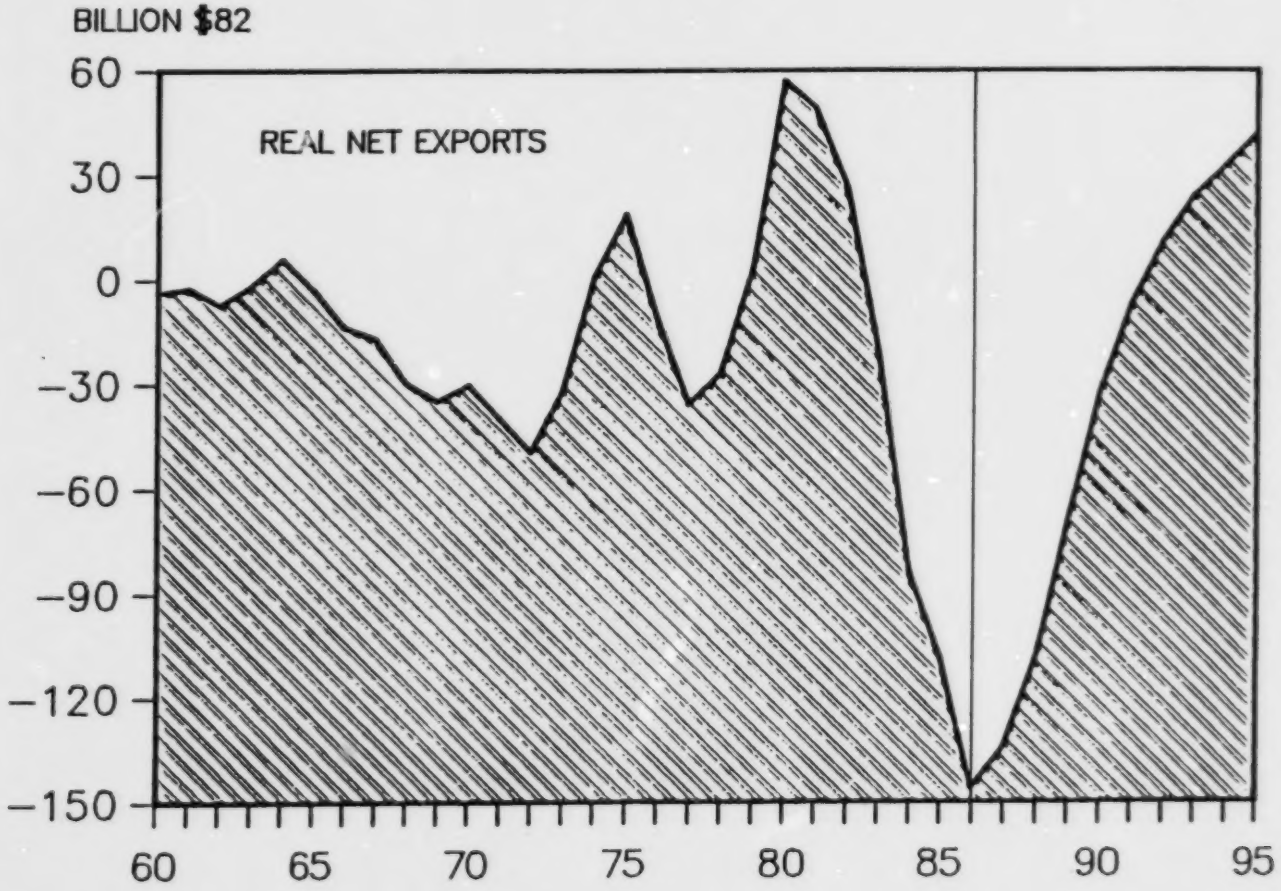


FIGURE 4

RETURNING FROM THE VALLEY: U.S. COMPETITIVENESS IS A POTENTIAL SMOKESCREEN

RISI OUTLOOK CONFERENCE
OCTOBER 22, 1987



the benefits of a currency devaluation (the leading edge of the sword) and why the mechanics behind the theory have not been effective for the U.S. were discussed. Finally, the negative effects of a falling dollar (the trailing edge of the sword) were presented.

Analysis:

Several economic factors have contributed to the freefall of the real net exports in the United States:

1. Several years of excessive government spending have put upward pressure on prices and helped overstimulate demand for imports. Consequently, Government borrowing has increased dramatically since 1980 (Figure 5).

2. The strong U.S. dollar vis-a-vis the Japanese yen and German mark prior to 1985 has made U.S. manufacturers uncompetitive in world markets.

3. The increase in Government spending plus low interest rates (Figure 6) has resulted in domestic consumption rising faster than real GNP (Figure 7); imports have offset the difference. Furthermore, these factors have been major elements fueling the U.S. budget deficit. The dramatic increase in the budget deficit has caused an increase in demand for foreign capital (Figure 8).

4. Foreign investors from the other G-5 nations have been increasingly investing in the U.S. economy over the last several years primarily because of the high returns available in the U.S. compared to other countries (Figure 9). Unfortunately, these investments were in sectors and industries that were not export oriented. The U.S. as a safe "haven" for foreign investors has disappeared, however, as U.S. interest rates have fallen to world rates.

The aforementioned points are the main factors contributing to the U.S.'s huge trade deficit. As noted previously, the U.S. dollar vis-a-vis the Japanese yen and German mark has been declining dramatically since 1985 so as to reverse the deficit. Theoretically, as the dollar falls, the international prices of U.S. products declines, thus foreign demand will increase. Simultaneously, foreign goods become more expensive in the U.S. thus Americans reduce their demand for imports. These events, theoretically, should reduce the trade deficit.

Unfortunately, there has not been an abatement of the U.S. trade deficit. This is due to several reasons. First, consumer demand for such foreign imports as Toyota cars, Gucci shoes and Rossignol skis is very price inelastic in the short run. Consequently, a rise in price does not easily discourage consumer purchases of these goods.

Secondly, many foreign manufacturers have kept their prices down in order to maintain market share in the U.S..

Finally, exports from the U.S. have actually increased and the growth of imports have slowed sharply this year. However, the dollar has continued to drop precipitously, thus the cost of the imports is rising much faster than their volume resulting in the trade deficit (dollar terms) to continue to augment.

FIGURE 5

SUSTAINED GOVERNMENT BORROWING OF THIS MAGNITUDE IS UNPRECEDENTED

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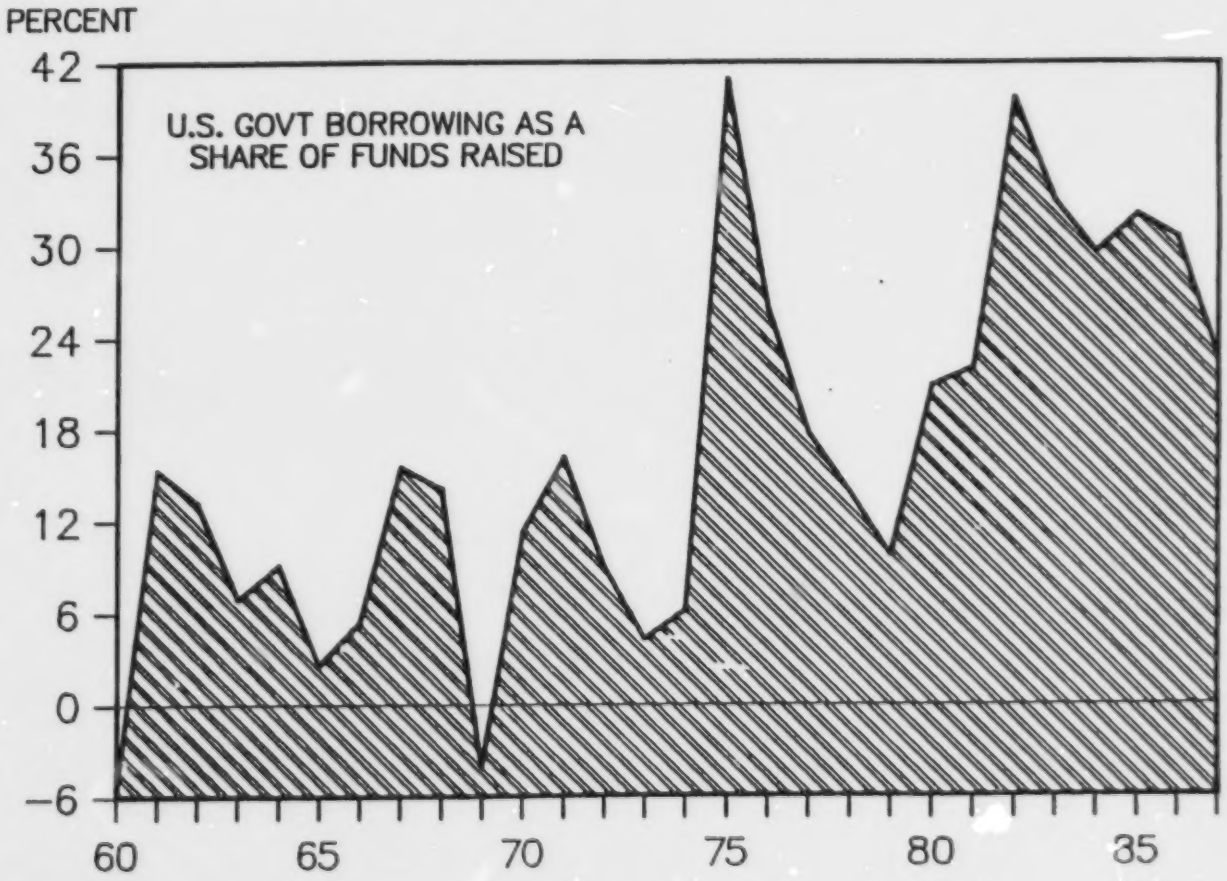

FIGURE 6

RECENT SURGE IN RATES DUE TO RESTRICTIVE POLICY

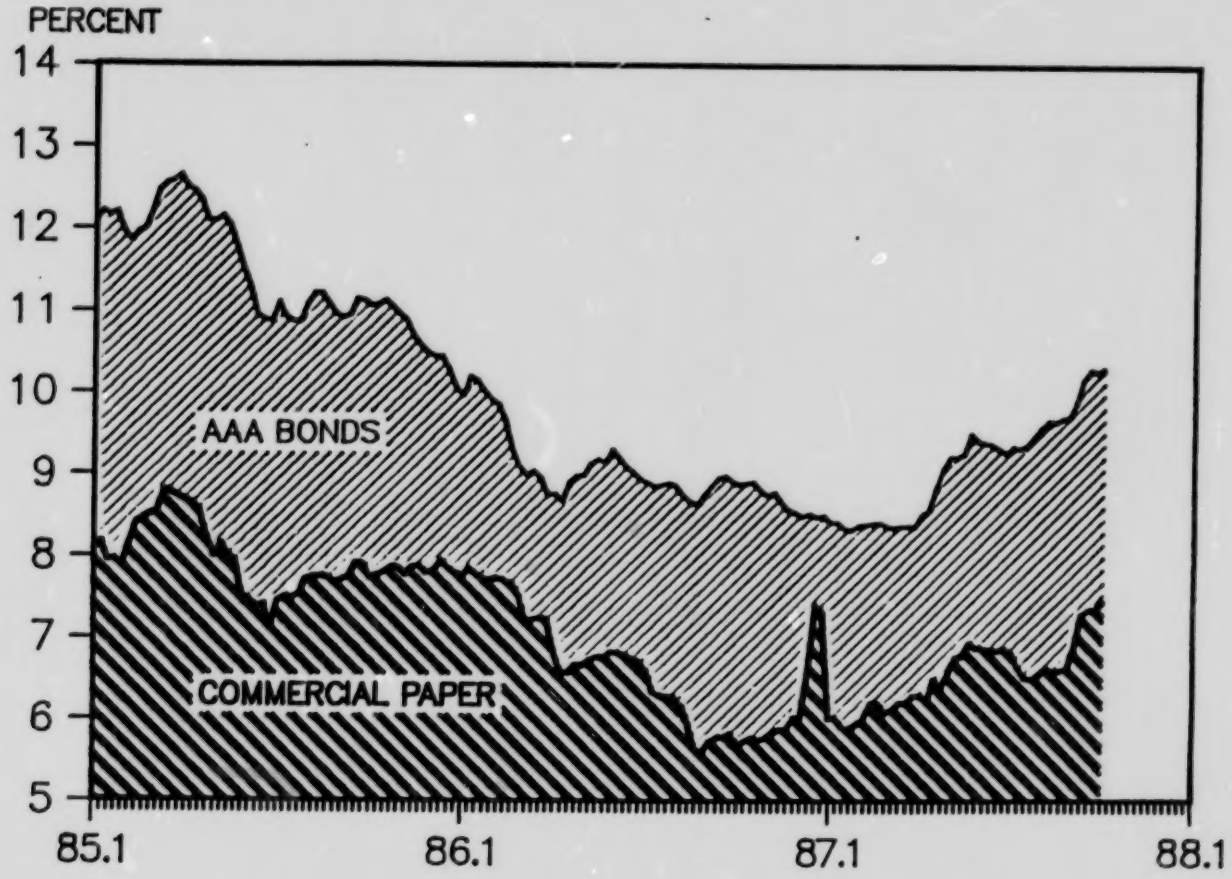

FIGURE 7

AS WE ENTER TRANSITION PERIOD, GNP GROWTH WILL EXCEED CONSUMPTION GROWTH

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OCTOBER 22, 1987

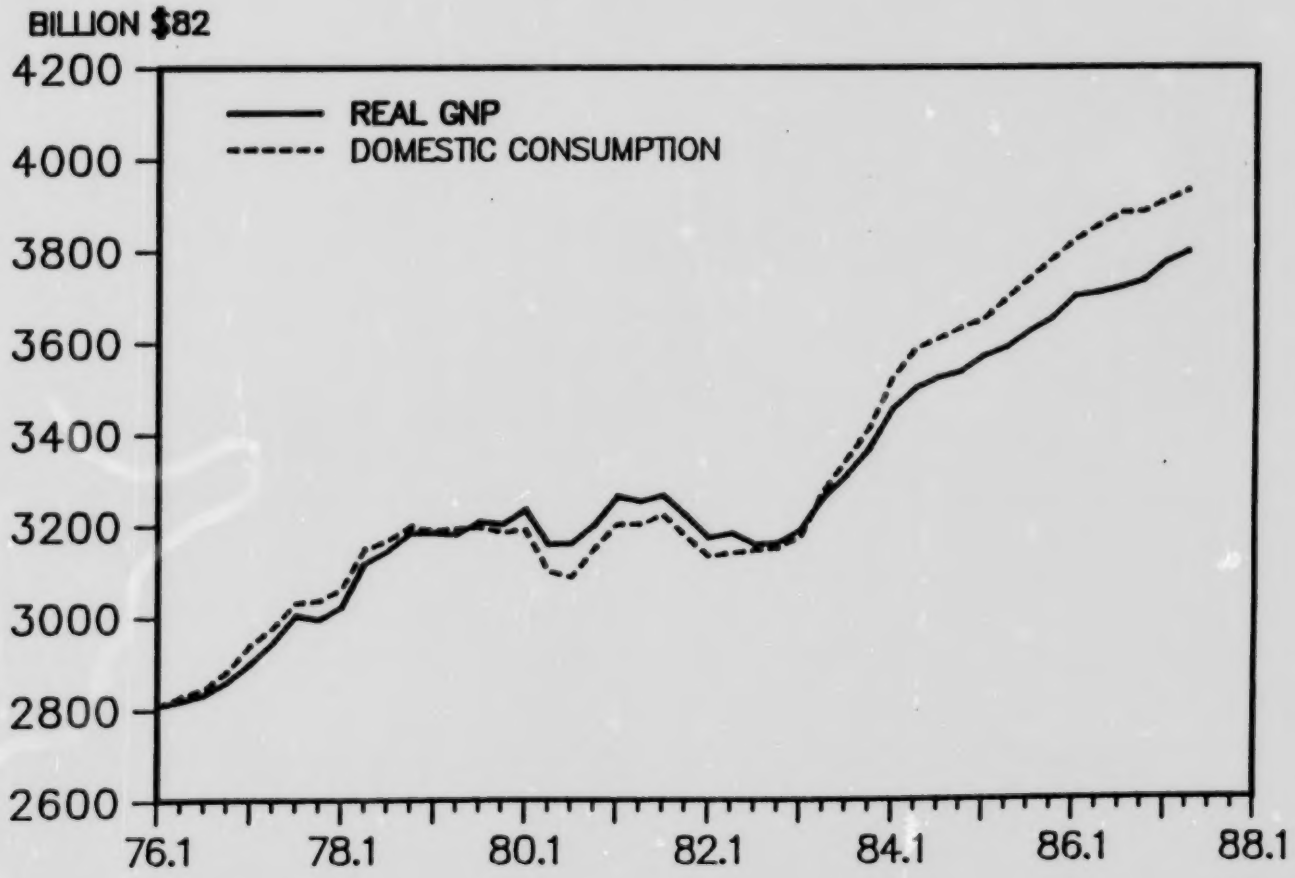

FIGURE 8

OVER 20% OF NET U.S. BORROWING IS FOREIGN SOURCED

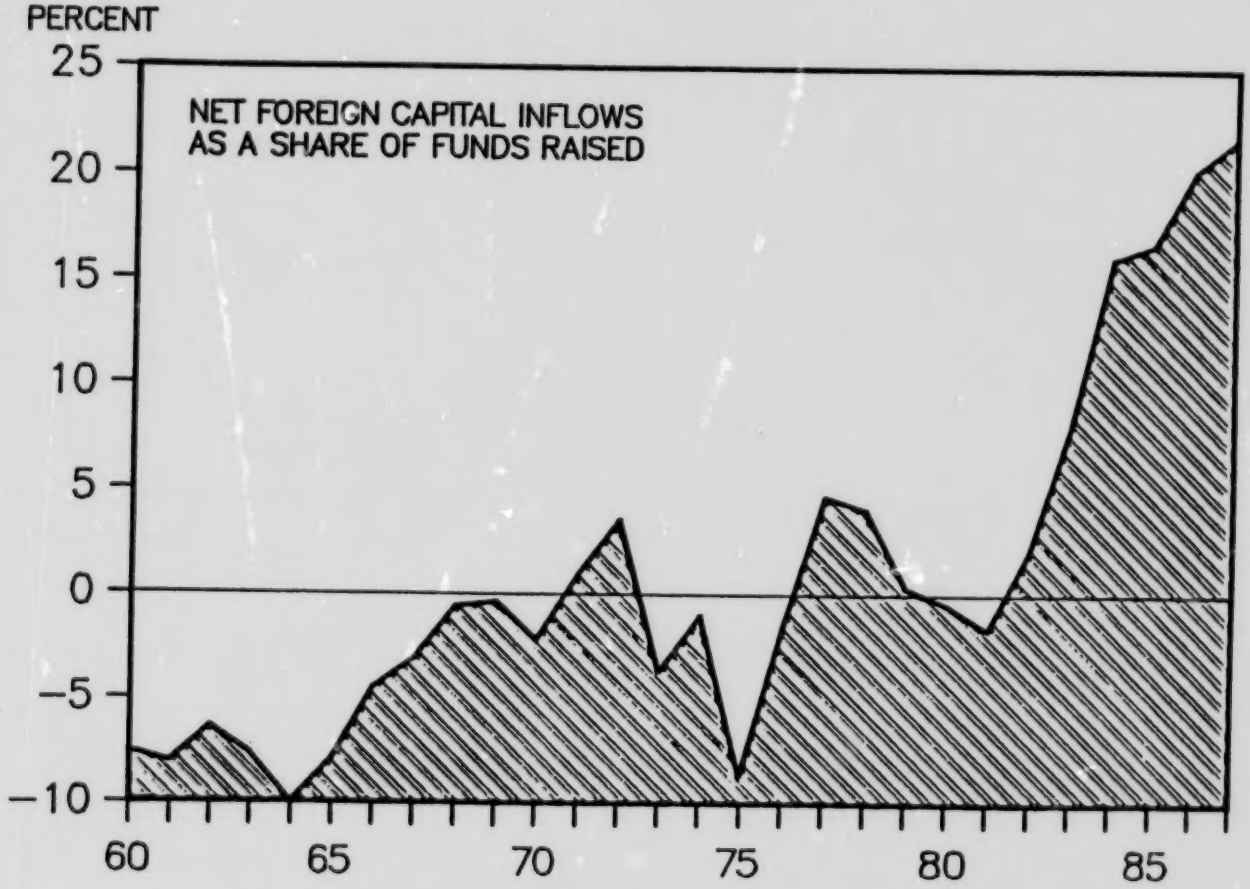

FIGURE 9

AS REAL U.S. RATES FELL TO WORLD RATES, THE "SAFE" HAVEN DISAPPEARED

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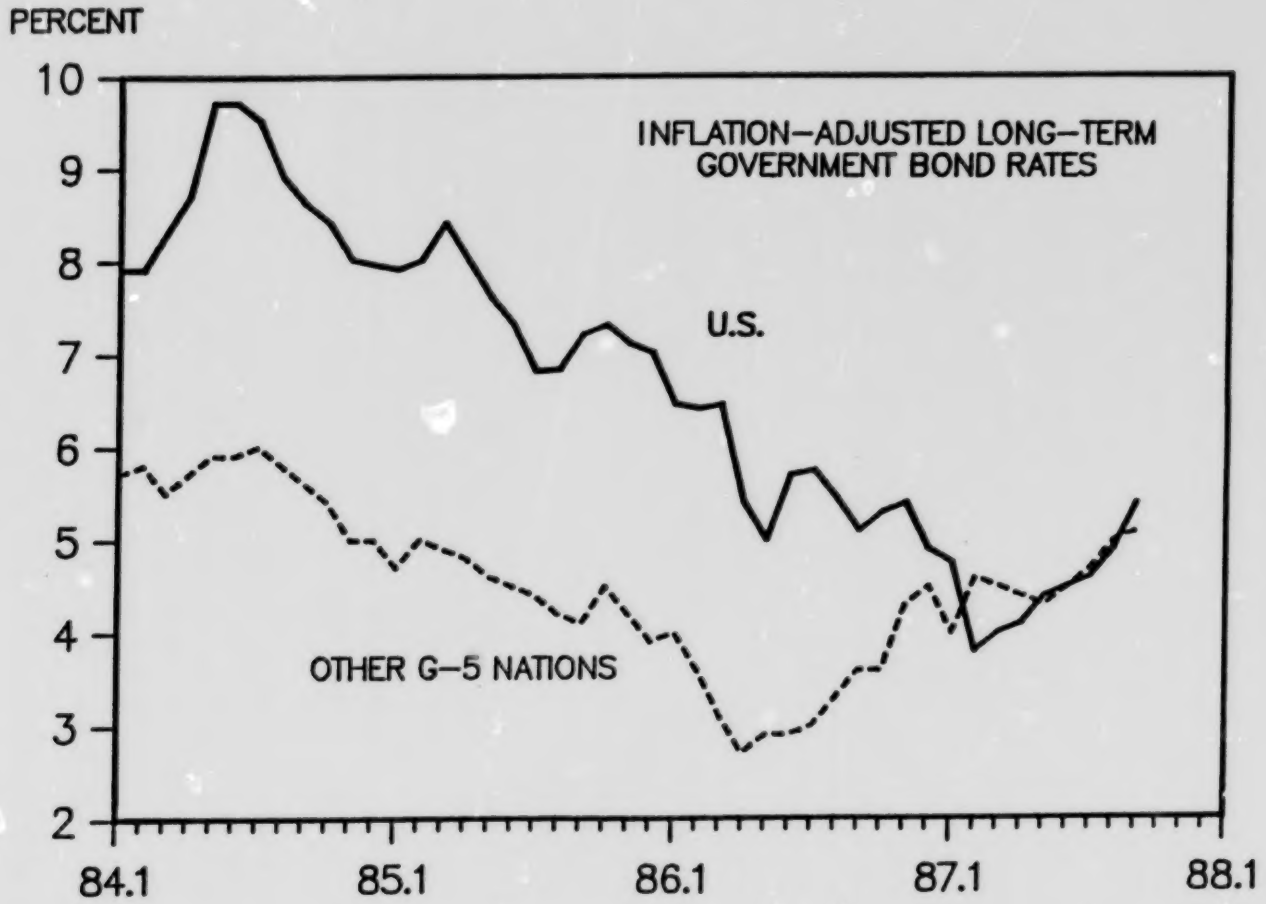


Theoretically, the declining dollar is supposed to subdue the trade deficit. Nevertheless, a declining dollar can also have some unpleasant side effects on the U.S. economy. First, as foreign products become more expensive, many U.S. manufacturers will raise their prices too. This could result in an increase in inflation. Secondly, the weak dollar may guarantee U.S. producers access into many foreign markets thus undermining their incentives to become more effecient. Finally, the lower dollar, coupled with lower prices on Wall Street, may make U.S. industry increasingly vulnerable to takeovers by foreign buyers.

Conclusions:

Several economic factors have contributed to the United States' enormous trade deficit. Theoretically, the devaluation of the U.S. currency vis-a-vis the Japansese yen and German mark should have reversed the fall. Unfortunately, however, the trade deficit has not declined. Nevertheless, if the dollar's decline stabilizes, its leading edge should cut into the trade deficit. However, the trailing edge of the falling dollar can have serious side effects on the economy. As a result, the stability of the U.S. economy in the very near future will be very sensitive to what actions are taken by the Federal Reserve Board with regards to the declining dollar and enormous trade deficit.

SESSION II: SOURCES OF SUPPLY FOR PACIFIC RIM FOREST PRODUCTS MARKETS

Timber Supply In British Columbia - Another Opinion.

Doug Williams
D. H. Williams & Associates

Introduction:

Commonly in forestry, the "timber supply" is determined based on the inventory of the resource and its annual rate of growth. Current and future harvest volumes are thus derived from the physical dimension of the forest resource. Alternatively, the economic "timber supply" is the rate at which timber will be made available for harvesting in response to a range of product prices. The differences in annual harvest volumes from these two measures can be great.

Therefore, this presentation focused on the major factors determining the economic "timber supply" in British Columbia, with particular emphasis to the coastal region, and some conclusions about the expected future economic "timber supply" compared with the physical "timber supply". The remainder of this presentation was structured into the following categories: Current Estimates Of Supply; Economic Dimensions Of The Timber Supply; Factors Affecting Economic Timber Supply and; Conclusions.

Analysis:

<u>Current Estimate Of Supply:</u> Currently in B.C., the annual allowable cut (AAC) for each of the 33 Timber Supply Areas (TSA) and 32 Tree Farm Licences (TFL) is computed to determine the physical "timber supply". It is determined from the "net land base" (area of productive accessible operable forest land) which

occupies 41% of the productive forest land in B.C.. The remaining 59% is divided as follows: (1) 4.5% are environmentally sensitive areas; (2) 6.5% are NSR; and (3) 48% are inaccessible or inoperable.

The amount of area that is inaccessible and inoperable is determined by economic factors such as the Forest Service's and industry's estimates of cost of extraction and future timber values; however, some reservations are made regarding their estimates which led to this research. At any rate, using their procedure the extensive margin is located for determining the "net land base" which is required to compute the AACs. Using this procedure, the physical "timber supply" stock in the Coastal B.C. region could theoretically last for 68 years at the current rate of harvest of 25.8 MCUM/year. However, some areas will experience a falldown sooner than others due to the uneven distribution of the old growth timber. Finally, in the Interior B.C. region, it is forecasted that the current, annual rate of harvest of 43 MCUM can almost be sustained indefinitely with a possible 3% reduction in the harvest level over the next century.

Economic Dimensions Of The Timber Supply: The reservations regarding the above forecasts are that the economic feasibility of the harvest is not addressed. The determination of the extensive margins does include some economic reasoning but it is somewhat subjective and informal. Furthermore, the profit estimates of harvesting these marginal stands are based on a short term view of the forest products markets which is confused by the effects of inflation and currency exchange rates. Consequently, reservations are made with regards to the estimates of future value of the stands and not so much with the estimates of cost.

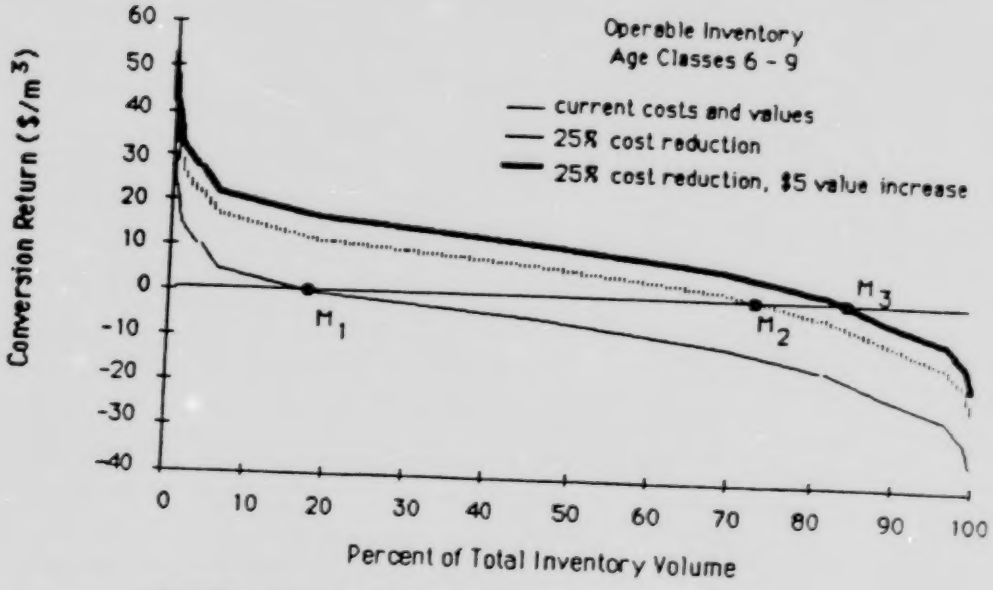
Given June 1985 log prices, it was found that only 25% of the net forest inventory was within the extensive margin which corresponds to about 16 years of harvest compared to 68 years using the current methodology. Further results indicated that the extensive margin was extremely sensitive to changes in prices and costs. With a cost reduction of $10/CUM (25%), 37 years of harvest became available. Reducing costs by 25% and increasing price by $5/CUM it was found that about 50 years of harvest became available in the Coastal B.C. region (Figure 10).

Factors Affecting The Economic Timber Supply: The rate at which timber will be harvested in the future in B.C. is dependent on (1) the changing physical characteristics of the forest; (2) market cycles and trends; (3) public policy strategies; and (4) industry reaction. These factors are discussed below.

Changing Forest:

Several changes in the physical characteristics of the forest in the medium and long terms are expected: (1) The average diameter of stems harvested will decline as we move into younger stands; (2) a continued decline in log quality; (3) the species composition of the harvest will change (an increase in hemlock harvested on the Coast); and (4) the historical deterioration of harvesting conditions (i.e., slope, terrain roughness, truck hauling distances) on the coast have stabilized, however, the operations in the interior are confronted with longer haul distances and steeper slopes. All these factors will put upward pressure on costs and downward pressure on timber values causing the extensive margin to shift inwards which reduces the AAC and forest land base.

Figure 10. Sensitivity of the extensive margin of coastal TSAs to changes in costs and values.



SOURCE: "The Economic Stock of Timber in the Coastal Region of British Columbia" by D.H. Williams & R. Gasson Dec. 1986

Market Trends:

The real price of industrial wood in the U.S. between 1900 and 1950 grew by about 1.5% but only grew at the rate of 0.4% over the 1950 to 1983 period. If future growth rates are at 1.5% then the extensive margin will expand into the current inoperable timber areas at a rate that exceeds the current annual harvest. However, at a rate of 0.4% the stock of old growth inventory will contract.

Public Policy:

With the use of a number of policy levers, the government can control timber production of marginal timber by (1) adjusting stumpage minimums, (2) enforcing or relaxing utilization standards, (3) relaxing the limits on how much an operator can cut above or below its AAC and the period of time over which the operator's harvest must balance its quota, and (4) relaxing the restrictions on log exports which introduces higher prices thus increasing the extensive margin. These policies have been used in the past and will most likely be used in the future especially for Coastal operations.

Industry Response And Strategy:

Industry can increase the extensive margin by reducing costs and producing a higher priced product from the same timber.

Conclusions:

British Columbia will be able to maintain their current rate of harvests for 30 to 50 years. Nevertheless, the industry is operating very close to the extensive margin which may result in discomfort to some firms during troughs in the market cycles. The changing forest will put upward pressure on costs and downward pressure on real prices which will contribute to the discomfort. As a result, these effects will have to be offset by current and new government policies, increase in cost reducing technologies and an increase in higher priced product innovations.

Timber Supply.

Keith Balter, Manager, Timber Service
RISI

Introduction:

This presentation focused on the current and future timber supply in the Pacific Rim basin. The following areas were discussed: U.S. Coast, Chile and New Zealand, Russia and Japan.

Analysis:

U.S. Coast: The private softwood inventory is expected to decline substantially in the late 1990s and very early 2000s and then rebound in 2016 (Figure 11). This is primarily because of tighter timber supplies due to the severe fire season in 1987 and higher timber values. On the other hand, public softwood inventories are expected to rise from about 17500 MCFT (thousand cubic feet) in 1986 to 28800 MCFT in 2016. This growth will stem from the federal forests where the harvest rates have not approached the growth rates (Figure 12).

FIGURE 11

Private Softwood Inventory Aged 55 to 100 Years
Conifer Acres Only
—Million Cubic Feet—

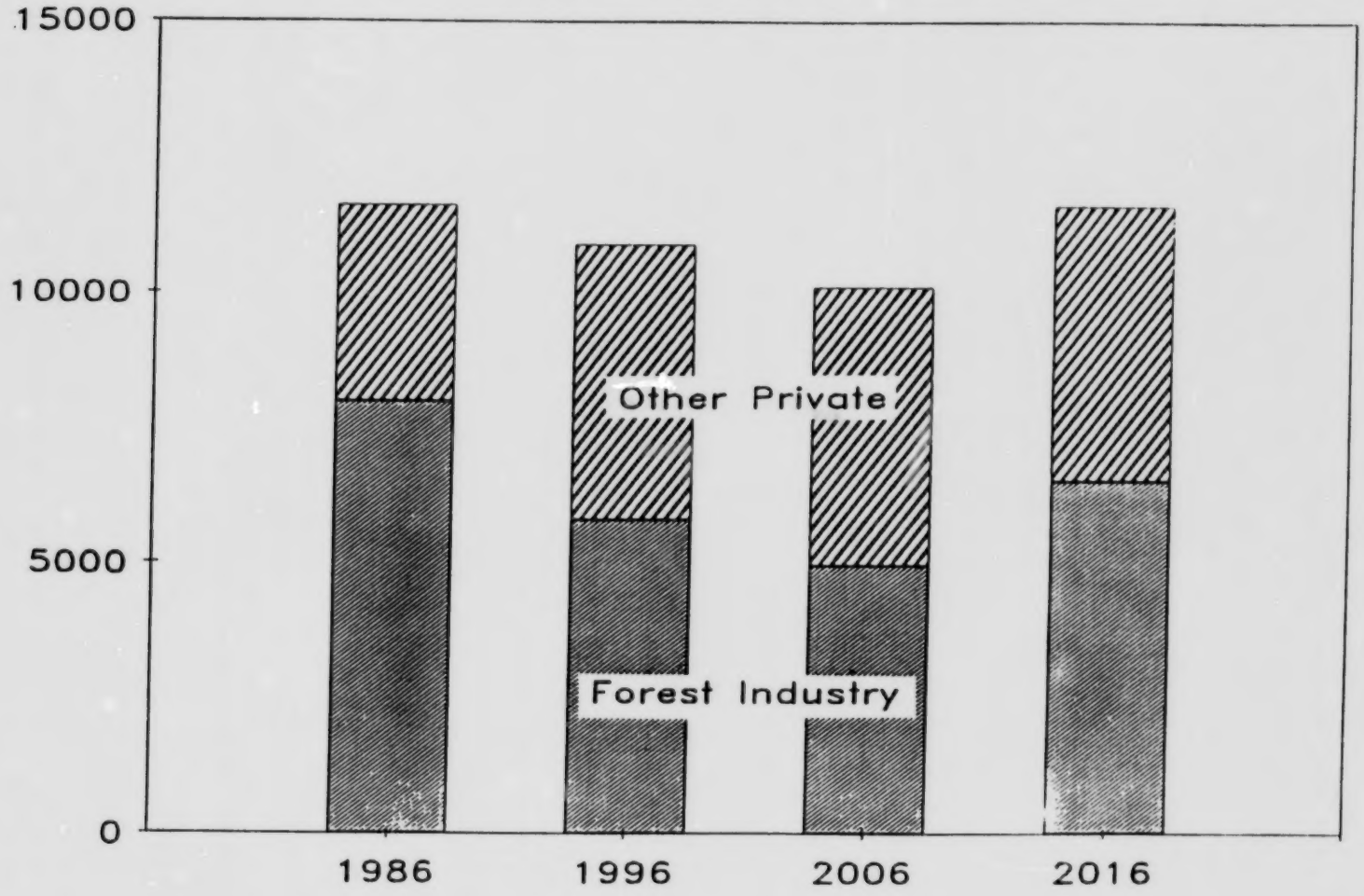
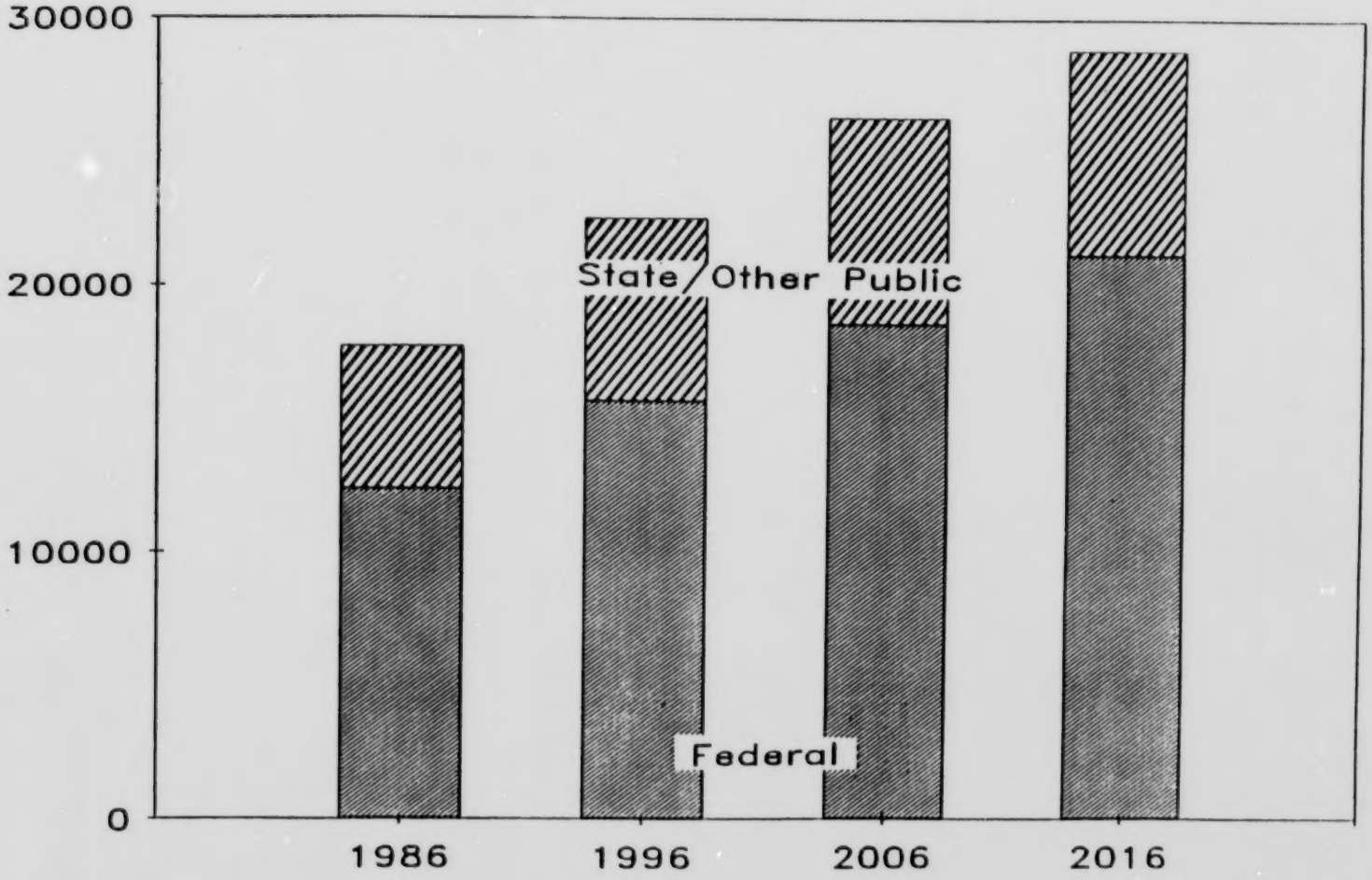


FIGURE 12

Public Softwood Inventory Aged 55 to 100 Years
Conifer Acres Only
—Million Cubic Feet—



Resource Information Systems, Inc.

Harvest levels on private forests are approximately 1160 MCFT/year with about 20% of the harvest being from the 100+ age class. It is expected, however, that this age class will be liquidated by 2012-16. The harvest level on public lands is currently about 925 MCFT; 90% of which is from the 100+ age class. The harvest level is expected to decline slightly to 850 MCFT by 2012-16; 68% of the harvest being from the 100+ age class. This decline is primarily the result of environmental, wildlife, recreation and budgetary constraints. The decline in harvest will come from Federal forest lands which will shift more pressure onto private and state lands. Increased harvest on state and industry owned lands will lower the future availability of timber from private owners.

Restrictions on log exports are predicted to be unlikely, especially on private timber lands, because of the dependence of firms on this market. Also, log restrictions may induce lost export markets for the U.S.. However, it would reduce regional stumpage costs and increase plywood and lumber manufacturing.

Chile & New Zealand: Radiata pine plantations in both countries have been a target industry, where they have an natural and enduring comparative advantage. As a result, the total area of plantation is expected to increase from 5.1 million acres in 1986 to 7.5 million acres by 2001. Consequently, the inventory volume is expected to increase from 41 BBF (256 MCUM) to 103 BBF (650 MCUM). Moreover, annual harvest levels are expected to increase from approximately 2.9 BBF (18.2 MCUM) in the late 1980s to 11.0 BBF (69 MCUM) by the early 2000s.

The harvest levels from these regions are very close to those on the coastal U.S. which may result in an oversupply of timber in the market. However, it is predicted that the majority of the increase will go to domestic consumption and the remaining to China, therefore sufficient demand is expected.

Russia: In Russia most of the southern and eastern forests have been overcut. An increase in harvest levels would lead to an expansion of the industry into inaccessible areas in the north and northeast. These areas are currently inaccessible because of (1) poor climate, (2) lack of infrastructure and labor, (3) high logging and transportation costs (4) over mature timber, and (5) poor quality timber and species mix. Unless Russia is willing to invest into these areas, a dramatic increase in supply from here is not expected.

Japan: Japan's timber resource area is expected to remain constant into the year 2000. Japan's inventory is expected to increase modestly from 2.7 BCUM (billion cubic metres) in 1984 to 3.6 BCUM in 2004. However, an increase in volume is expected in the 2020s as the substantial number of trees planted in the 1960s and 1970s mature. Nevertheless, this increase should be discounted for several reasons: (1) the plantations have not been thinned thus contributing to poor growth; (2) plantation yields have been overstated and the rotation age (45 years) has been understated; (3) the mountainous terrain creates high logging and transportation costs; (4) there are tightening labor supplies in the rural areas; (5) the forestry agencies are faced with a huge deficit leading to future cutbacks; and (6) public policy has been increasingly favoring environmental/recreation uses versus timber production.

Conclusions:

In the medium term (1987-1995) tighter timber supplies are expected in the

coastal United States. Moreover, very little competition is expected from the other areas because (1) Chile's and New Zealand's forests are too young, (2) Russia is not very responsive, and (3) Japan is not aggressive in the forest industry.

In the longer term (1995 & beyond), depending on government policies, supply is expected to stabilize in the coastal U.S.. In Chile, New Zealand and Japan, a large quantity of timber volumes will come on stream as their plantations mature. Finally, if rising timber values are sustained, then additional supply increases may come from Canada and Russia.

Competitive supply in the Pacific Rim regions.

Peter Drake
Manager of Wood Products
Woodbridge, Reed and Associates

Introduction:

This presentation focused on North America's traditional and future competitive suppliers of lumber and panel products; SE Asia (excluding Japan and China), Developed Oceania and Latin America.

Analysis:

SE Asia: SE Asia is, currently, a net supplier of lumber and panel products but within the region some countries are net importers rather than exporters. However, according to an recent analysis by the Asian Development Bank (ADB), SE Asia is expected to become a net importer of lumber by the year 2000; but still remain a competitive supplier of panel products.

Within SE Asia, Indonesia is expected to be the dominant net exporter of both lumber and wood panels in the future. This is due to the fundamental policy changes in log exports this country made during the first half of the 1980s. Currently, log exports have been virtually banned in order to promote domestic conversion of lumber and plywood. Consequently, this country is expected to remain a competitive supplier of solid wood products.

Recent lumber production forecasts for SE Asia by Woodbridge, Reed & Ass., FAO & Chase have suggested that this region will be more competitive than is indicated by the ADB. Therefore, it is believed that this region will continue to be a net supplier of lumber. However, it is expected that countries such as Korea and Taiwan will increase their need for higher grade lumber which will allow coastal PNW and B.C. producers to compete with the traditional SE Asia hardwood suppliers. Also, the increasing domestic consumption of lumber in Indonesia and Malaysia will be used primarily for general construction; hence, export volumes of these grades could be reduced, creating an opportunity for North American producers to compete with lower construction grade products in importing countries.

Woodbridge, Reed & Ass. expects panelboard production in Asia to increase from the 1985 level of 9.5 million cubic meters to 16 million cubic meters by the year 2000. The majority of this supply is likely to be in plywood. However, a significant increase in particleboard and MDF capacity is expected as well. It will, therefore, continue to be difficult for North American panel producers to increase export volumes to the Pacific Rim.

Developed Oceania: The consumption of sawnwood lumber in Australia has remained relatively static for many years; however, consumption of softwood lumber has risen. The increased consumption of softwood lumber has been offset by the decline in hardwood lumber consumption. These trends are reflected on the lumber supply side as well. It is believed that Australia will become increasingly self sufficient in softwood lumber as their radiata pine plantations mature.

The principal import suppliers of sawnwood to Australia are North America (60%) and New Zealand (20%) for softwood and SE Asia (20%) for hardwood. Traditionally, Australia has been the largest offshore market for the U.S. and accounts for close to half of Canada's offshore exports of Douglas fir. Thus, an expected decline of import lumber by Australia could significantly affect North America's offshore exports.

The impact of New Zealand as a competitive supplier is a result of the much discussed growth in radiata pine sawlog availability that will become evident after 1990. The increase in wood supply is claimed to be capable of supplying the wood requirements of 20 plywood mills, over 20 sawmills and a number of reconstituted panelboard plants. Given the assumption that there will be sufficient investment funds to fully utilize this abundant wood supply, New Zealand is expected to become a net exporter of 2 million cubic meters of lumber and 1 million cubic meters of panel products. Because radiata pine is a fast growing species, most of the lumber competition from New Zealand will be in the construction and packaging grades.

New Zealand has obtained an excellent reputation for high quality MDF, particleboard and fibreboard in the Pacific Rim market. Currently, however, the cost of container shipment is very high, thus limiting New Zealands' potential in these products. Nevertheless, as the movement of other forest products increases it is likely that less expensive freight will develop. This would allow New Zealand to become a very competitive supplier of panel products.

Latin America: The only Pacific Rim country in Latin America that is of significance as a supplier to the region is Chile. Considerable wood volumes from Chile's radiata pine plantations are expected in the near future.

It is projected that production of softwood lumber in Chile will double to 4 million cubic meters by 1995. Since it is believed that domestic consumption will not change significantly, most of this production will be exported. If the Chilean sawmilling sector is to achieve the 4 million cum production level, a capital investment of about $300 million is required.

The current structure of the forest industry in Chile is, however, primarily focussed on the pulp and paper sector. This is due to the higher profitability of new investment in this area compared to the sawmill sector. Nevertheless, as greater volumes of good quality sawlogs become available, Chile could become a competitive supplier of high quality lumber. Consequently, with an increase in investment and implementation of quality controls and grading systems that are acceptable to the U.S., Chilean produced lumber could penetrate U.S. markets. Also, they could become a threat to North American suppliers in Pacific Rim markets.

Since the cost of resins and freight is high in Chile, development of panel products is not expected to be significant.

Conclusions:

The supply of hardwood lumber in the Pacific Rim Basin is expected to remain tight in the near future whereas softwood lumber supply is expected to increase substantially. The increase of softwood lumber will come predominately from the radiata pine plantations in Australia, New Zealand and Chile. Production of lumber in Indonesia will also increase which stems from the recent ban on log exports. Finally, in the short term, Indonesia is expected to be the major competitive supplier of panel products in the Pacific Rim. Currently, costs of shipment and production are too high in order for New Zealand and Chile to capitalize on this market.

Competitive advantage in lumber.

Robert Berg
Vice President
RISI

Introduction:

This presentation focused on the existing status of the softwood lumber industry in selected Pacific Rim countries. Production, trade and production costs of softwood lumber were the areas discussed in this presentation.

Analysis:

Table 2 shows softwood lumber production and net exports for selected Pacific Rim countries in 1985. The North American industry produced 73% of the softwood lumber in 1985. They also had the largest net exports in the Pacific Rim. Japan was the second largest producer (14%) yet it was the largest net importer of softwood lumber of the selected Pacific Rim countries. Overall, total production of softwood lumber in the Pacific Rim was 172.74 MCUM in 1985.

In 1985 Canada exported 2.74 MCUM of softwood lumber to the Pacific Rim compared to 2.04 MCUM by the United States. Canada exported an additional 2.04 MCUM to other offshore markets compared to 0.83 MCUM from the U.S.. Nevertheless, of the Pacific Rim countries, Japan has been the dominant importer of softwood lumber from both these countries.

The Japanese softwood lumber industry is expected to be able to supply its strong increasing domestic demand through the early 1990s. This is because there seems to be continued improvements in productivity in the industry and no shortage of capital in the future. However, productivity gains in the late 1990s are predicted to exceed demand as housing consumption by the baby boomers begins to slow down. Given this, softwood lumber exports from North American to Japan should remain strong into the early 1990s but eventually stabalizing by the late 1990s.

In New Zealand the softwood lumber production capacity is expected to stagnate because (1) of high conversion costs and cargo freight costs which will limit their access into major growth markets in the Pacfic Rim, and (2) the growing supply of softwood timber in Australia will greatly reduce New Zealand's exports to its neighbor by the year 2000.

TABLE 2
SOFTWOOD LUMBER PRODUCTION AND NET EXPORTS
FOR PACIFIC RIM COUNTRIES
(MILLION CUBIC METERS, 1985)

	PRODUCTION		NET
	VOLUME	SHARE	EXPORTS
NORTH AMERICA	126.92	73%	4.78*
JAPAN	23.87	14%	-4.10
CHINA	13.04	8%	0.00
NEW ZEALAND	2.06	1%	0.47
SOUTH KOREA	1.92	1%	0.16
CHILE	1.87	1%	0.69
MEXICO	1.84	1%	-0.24
AUSTRALIA	1.22	1%	-1.09
	172.74	100%	-0.67

* TOTAL EXPORTS TO PACIFIC RIM COUNTRIES.

Softwood lumber production in China grew at 4.2%/year from 1970 to 1985. This rate has kept pace with the rapid growth in consumption. Since the low costs of entry and inexpensive labor will stimulate investment in domestic capacity and limit imports, the rate of capacity expansion in China will keep pace with domestic consumption to the year 2000. The volumes of softwood lumber trade have been insignificant for China and are expected to remain so. This is because the strong domestic production capacity and the quality problems have restricted lumber exports from China.

In Chile, the average variable costs to produce quality radiata pine are very competitive with production costs of southern yellow pine lumber in the U.S. (Table 3). This, coupled with an expected continuation of the increasing sawtimber harvest levels in the 1990s, will provide excellent opportunities for expansion of softwood lumber conversion in Chile. However, the expansion potential for the softwood lumber industry in Chile must be discounted because of the uncertainty about (1) availability of investment capital, and (2) the high competition with pulp and paper production and log exports for the sawtimber.

Conclusions:

Table 4 shows that North American softwood lumber exports to the Pacific Rim will only increase from 5.22 MCUM in 1985 to 6.36 MCUM in 1996. The major source of growth will be from Japan but this is expected to stabilize by the late 1990s. Very little import growth for North American softwood lumber is expected from China. The increasing domestic supply of sawtimber in Australia will jeopardize North American exports to Oceania market. Finally, the low costs and increasing timber supplies in Chile will result in an increase in competition for market share in Mexico and Caribbean countries.

Sources of Supply for Pacific Rim in the 1990s
Potential for the development of the pulp and paper industry in Argentina.

Alejandro J.Campbell
Commercial manager
Alto Parana S.A., Argentina

Introduction:

This presentation focused on the pulp and paper business in Argentina as well as the possibility of Argentina becoming a major source of supply of forest products in the Pacific Rim at the turn of the century. There are several factors as to why Argentina may become a very competitive supplier in the near future. These factors were discussed under the following areas: (1) Forests are the base; (2) Production costs for pulp and paper; (3) Competitivity and transportation; and (4) Capital costs.

Analysis:

Forests Are The Base: The base for the Latin American pulp and paper industry is its plantation forests and not the natural forests. Currently, Latin America has a very competitive forestry plantation because of lower growing costs for both hardwood and pine compared to regions in the northern hemisphere. The lower growing costs are due to (1) the climate, (2) land availability, (3) labour availability, and (4) new forestry plantation know-how. Because of the

TABLE 3

AVERAGE VARIABLE COSTS FOR QUALITY RADIATA PINE FROM CHILE AND SOUTHERN YELLOW PINE IN THE U.S.

(U.S. DOLLARS IN 1986)

	QUALITY RADIATA PINE	SOUTHERN YELLOW PINE
WOOD COST	53	88
MANUFACTURING	57	75
TOTAL	110	163

TABLE 4

NORTH AMERICAN SOFTWOOD LUMBER EXPORTS TO SELECTED COUNTRIES

(MILLION CUBIC METERS)

	1985	1996
JAPAN	3.71	5.93
AUSTRALIA	0.77	0.30
MEXICO	0.26	0.13
CHINA	0.04	--
CARIBBEAN	0.28	--
CUBA	0.06	--
PUERTO RICO	0.10	--
	5.22	6.36

-- = INSIGNIFICANT

substantial development of new plantations over the last 20 years, Argentina is starting to become a net exporter of pulp and paper.

Table 5 shows the current and predicted number of forest plantation hectares in Argentina. At the present there are approximately 700,000 hectares of planted forest. However, a large majority of these forests do not possess the high volume of wood that they should be capable of producing. This is because the cost of transportation to the mills is very high, thus these forests are only marginally interesting to the industry.

Production Costs For Pulp: Table 6 illustrates 1986 production costs of bleached kraft pulp for several regions of the world. As the chart shows, Argentina and Chile can produce bleached kraft pulp much cheaper than Sweden, Finland, U.S., Canada and New Zealand.

Apart from the lower costs due to wood factors, energy costs in Argentina are relatively low as well. Industrial energy costs in Argentina are about $35 (U.S. dollars (USD))/MWH (thousand watt-hours). In Finland and the U.S., they are closer to USD $50/MWH and USD $45/MWH, respectively.

Competitivity And Transportation: Over the last 15 years, Argentina has made important productivity gains in transporting pulp and paper. The strongest gains have been in ocean transportion predominately because of (1) unitization, (2) semi-automatic loading of ships, (3) more efficient terminal handling in both loading and discharging and (4) more efficient ships with better overhead cranes, box-shaped holds and fuel efficiency. These improvements, coupled with government subsidized freight rates, has helped Argentina compete in Pacific Rim markets. However, it is predicted that at some point subsidies from governments to shipyards will diminish, supply will decrease and more realistic freight rates will prevail.

Capital Costs: Very recently Argentina has announced the construction of three pulp mills and two paper machines. However, the cost of constructing pulp mills has risen much faster than the rate of inflation. These high costs, coupled with Argentina's high national debt, may cause the construction of new mills to stabalize in the future. This may inhibit the potential development of the pulp and paper industry in Argentina.

Conclusions:

In 1986, paper production capacity in Argentina reached a total of almost one million tons; 226,000 tons corresponds to newsprint. Production capacity of newsprint is predicted to double by 1995. Strong capacity growth is also expected in printing & writing paper and kraftliner (Table 7). Also, a considerable increase in production capacity of woodpulp is expected by the year 2000 (Table 8).

On the demand side, Table 9 shows that market pulp imports by Pacific Rim countries in Asia are expected to increase significantly by the year 2000. Hence, since a high quantity of low cost pulp and paper is predicted to be produced, Argentina may become a very competitive supplier of pulp and paper to the Pacific Rim in the near future.

TABLE 5

FORESTRY POTENTIAL

'000 HECTARES

	1986	1995 (a)	2000 (a)
Mixed Hardwoods	120	180	200
Pine Plantations	338	480	600
Eucaliptus	203	390	450
Poplar/Willow	141	200	250
Other	20	40	60

(a) Estimated

TABLE 6

BKP

PRODUCTION COSTS

ESTIMATED END 1988

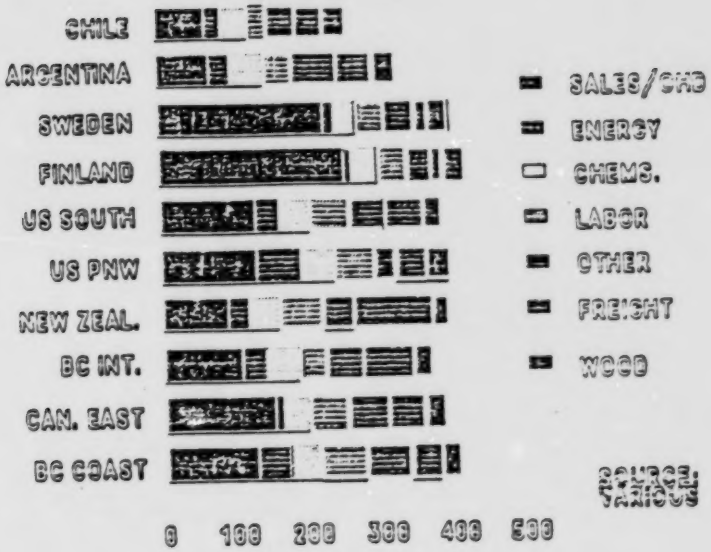


TABLE 7

PAPER PRODUCTION CAPACITY

(IN '000 - MT)

	1986	(*)1990	(*)1995
NEWSPRINT	226	360	450
PRINTING & WRITING	178	520	620
KRAFTLINER	162	400	420
MEDIUM (FLUTING)	53		
SACK KRAFT	127		
BRISTOL BOARD	60		
CARD BOARD	50		
OTHER P & B	90		
TISSUE	45	100	150

Source: AFCP

(*) Estimated

TABLE 8

WOODPULP PRODUCTION CAPACITY

(IN '000 - ADMT)

	1980	1986	1995 (*)	2000 (*)
Total	380	870	1200	1550
Market	-	218	600	850

(*) Estimated

Source: AFCP

TABLE 9

PACIFIC RIM: ASIA'S PROJECTED MARKET PULP-IMPORTS THROUGH 2000

('000 MT)

	1986	1991	2000	%change
JAPAN	2,278	3,010	3,900	+ 3.9
TAIWAN	313	360	620	+ 5.0
KOREA	720	1,200	1,780	+ 6.7
INDONESIA	260	300	350	+ 2.1
P.R.C.	470	520	900	+ 4.7
THAILAND	140	180	250	+ 4.2
MALAYSIA	20	50	60	+ 8.2
PHILIPPINES	45	60	200	+11.2
TOTAL	4,246	5,680	8,060	+ 4.7

Source: Hawkins Wright Associates

A case study of Far Eastern kraftliner markets.

Rodney Young
Vice President
RISI

Introduction:

The outlook of the kraftliner markets in the Far East to the year 2000 was the primary focus of this presentation. The volumes and costs of traditional kraftliner suppliers to the Far East as well as the forecasted demand for kraftliner in the Far East were discussed. This outlook was presented in three parts: Japanese Market, Other Far Eastern Markets and, Costs Of Production.

Analysis:

Japanese Market: Japan is the single largest kraftliner consumer in the Far East. This region consumed 1.9 million metric tons (MMT) of kraftliner in 1986. This is predicted to rise to 3.0 million tons by 2000.

Currently, the Japanese market is supplied primarily by domestic producers. This is because (1) their quality standards for kraftliner are different than those of North America and Europe, (2) imported chips are relatively cheap, (3) there is the opportunity to use a substantial amount of secondary fibre to furnish, (4) domestic producers have a transportation cost advantage, and (5) the box makers prefer to have the suppliers very close. As a result, imports only accounted for 10.5% of Japan's kraftliner demand in 1986. However, the import share of kraftliner demand has been increasing over time. It is predicted that as domestic demand grows faster than production capacity, imports of kraftliner in Japan will increase to 500,000 metric tons (MT) by 2000; which is a 300,000 MT increase from the 1986 level.

The United States and Canada have been the dominant foreign suppliers of kraftliner to Japan. These two countries accounted for 98% of Japan's imports in 1986 (Figure 13). Since North American producers have provided Japan with the quality standards they desire, their high market share is expected to remain in the future. However, low cost producers in Oceania and Latin America may expand their market share modestly (Table 10).

Other Far Eastern Markets: The other Far Eastern markets are heavily oriented towards imports because of their limited virgin fibre resources and their relatively small, individual markets which makes it difficult to justify a kraftliner machine. In these regions, imports accounted for 80% of kraftliner demand in 1986 which is up strongly from the 50% share in 1970. Import demand for kraftliner is expected to increase from 860,000 MMT in 1986 to 2.2 MMT in 2000. Imports will still account for 76% of total demand in 2000.

The United States and Japan are the dominant foreign suppliers of kraftliner to the other Far Eastern markets. These two countries accounted for 80% of the imports to these regions in 1986. However, both the United States and Japan may suffer share loss in the 1990s as greater supplies emerge from the lower cost producers. The greatest share gains are expected to be captured by New Zealand and Indonesia (Figure 14).

FIGURE 13
Shares of the Japanese Kraftliner Import Market by Major Supplier

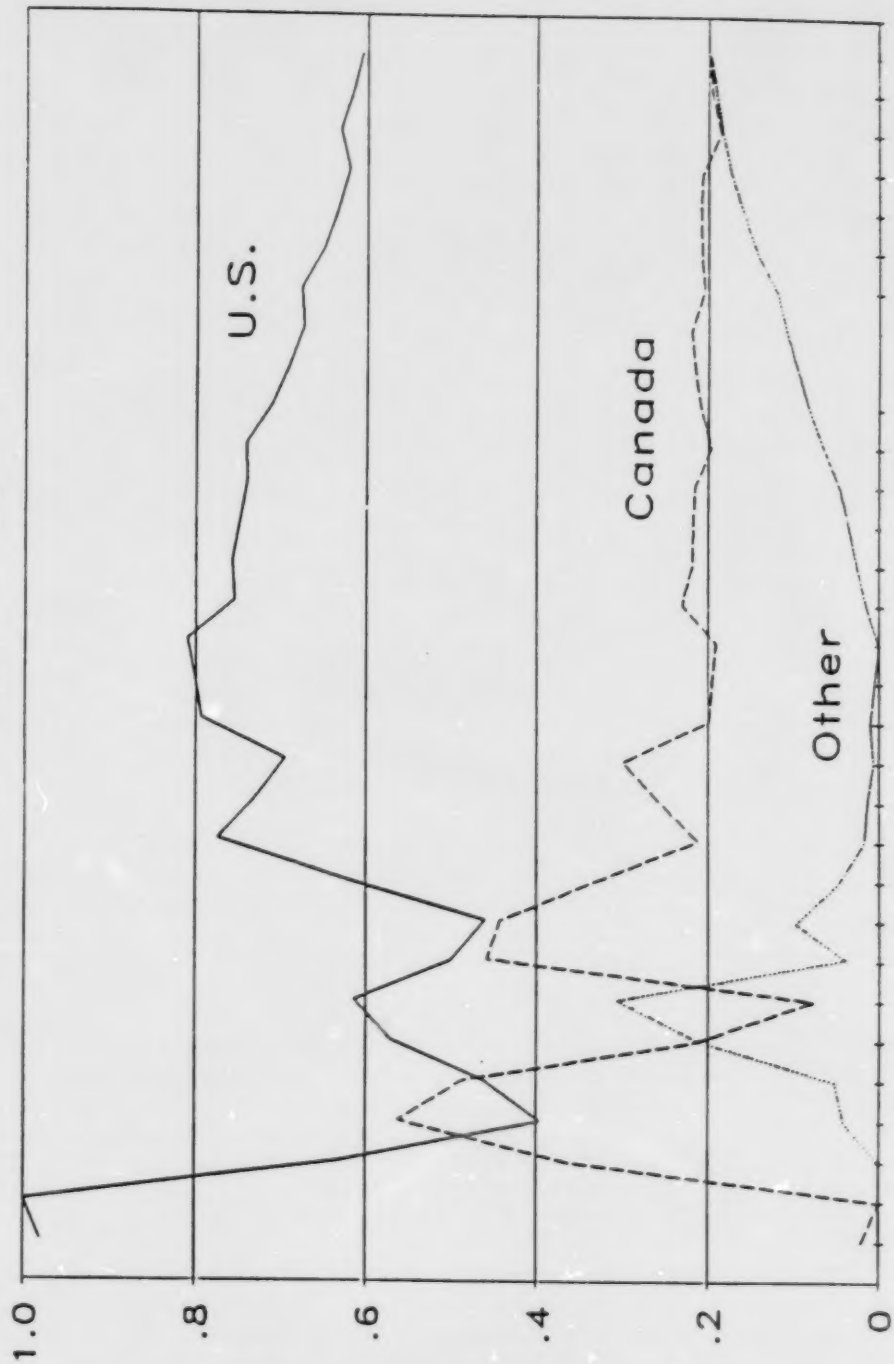


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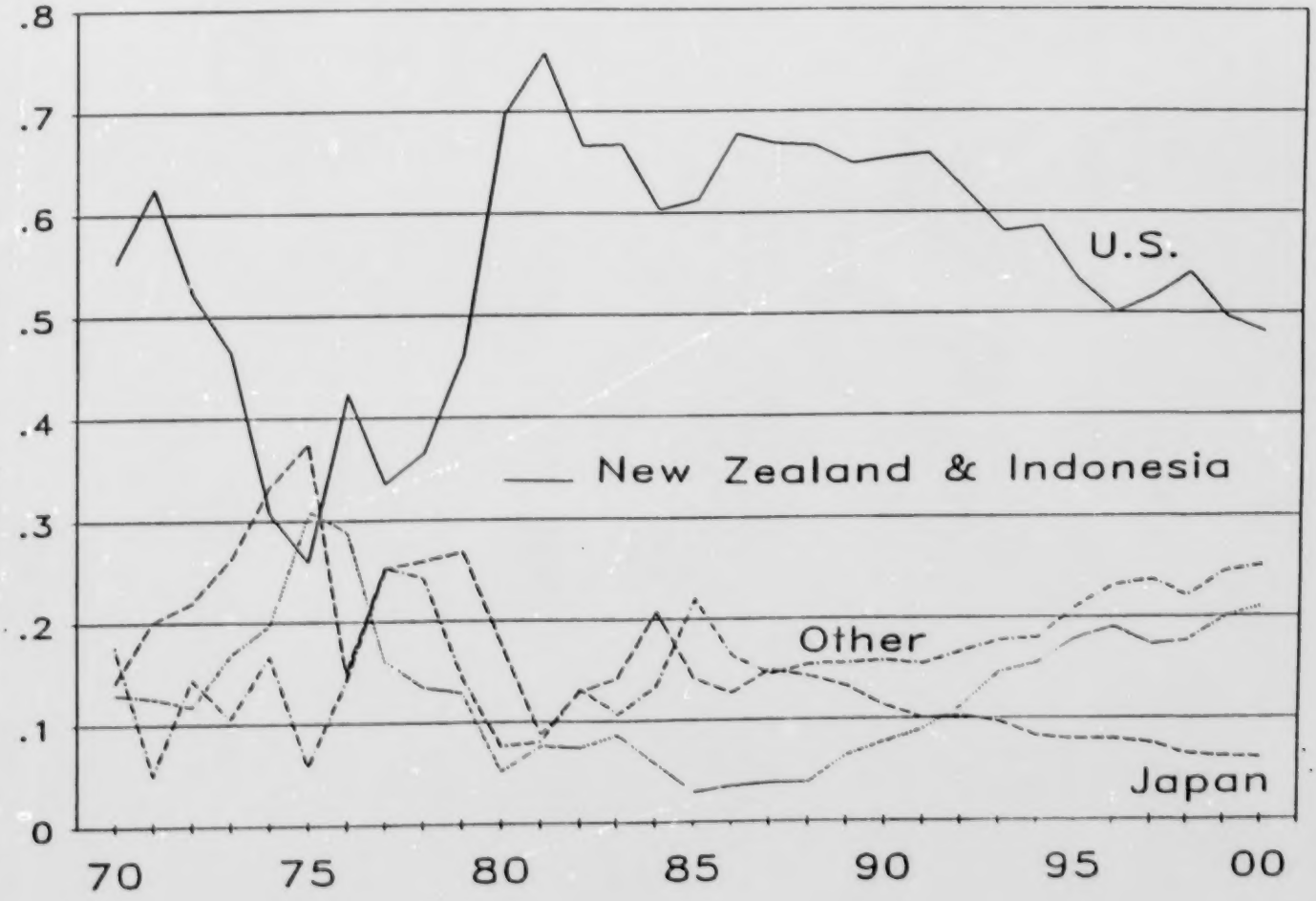
FIGURE 14

Shares of the Other Far Eastern Kraftliner Market by Major Supplier



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Costs Of Production: The lowest cost suppliers of kraftliner to Far East markets are predicted to be South Africa, New Zealand and Chile. These regions are expected to have a significant increase in wood supply in the near future and since kraftliner is very fibre intensive, these regions will have a cost advantage compared to North America (Figure 15). However, the emerging low-cost producers will be faced with major problems such as (1) poor access to capital, (2) high mill construction costs, (3) inability to meet quality standards of box makers, and (4) relatively high transportation costs. Table 11 shows that Chile and South Africa will be able to supply kraftliner to the Far East at the lowest variable cost. However, if fixed costs are accounted for, the difference between total costs of the low variable cost producers and North American suppliers becomes smaller (Figures 16 & 17).

Conclusions:

Containerboard is the single largest paper and board market in the Far East. The demand for containerboard is expected to reach 30 MMT by 2000, which is up from the 1986 level of 12.9 MMT. Kraftliner has accounted for 24% of the Far East's total containerboard demand in 1986 which represents 3.2 MMT. The demand for kraftliner in the Far East is predicted to increase to 6.5 MMT by 2000.

Japan is expected to remain the dominant consumer of kraftliner in the Far East. The demand for kraftliner by Japan is expected to reach 3.0 MMT by 2000 which will be increasingly supplied by foreign suppliers. North America will continue to be the major supplier of Japanese krafliner imports.

The demand for kraftliner by other Far Eastern markets will continue to increase and they will continue to remain heavily on imports. However, the major suppliers to these markets, United States and Japan, could lose some market share to lower cost producers in the future.

SESSION III: FORSIM OUTLOOKS

Macro Forecasts and Housing Outlooks

Johan Veltkamp
President
RISI

Introduction:

This outlook presented forecasted trends of various economic variables of the U.S. economy, including GNP, interest rates and housing starts, to the end of the century. A brief outlook of selected economic variables with regards to Japan, Western Europe and Canada were presented as well.

Analysis:

Figure 18 describes anticipated changes in real GNP growth in the U.S. economy to 1992. A brief recession is expected to occur in 1989 and 1990. The percent change in industrial production is also predicted to be negative in 1989 and 1990. Both consumer and producer price indexes are also expected to decline in 1990 after peaking in 1989.

FIGURE 15

200 G Kraftliner Average Variable Costs
(U.S. Dollars per Metric Ton)
Delivered to the Far East Market
for Selected Suppliers

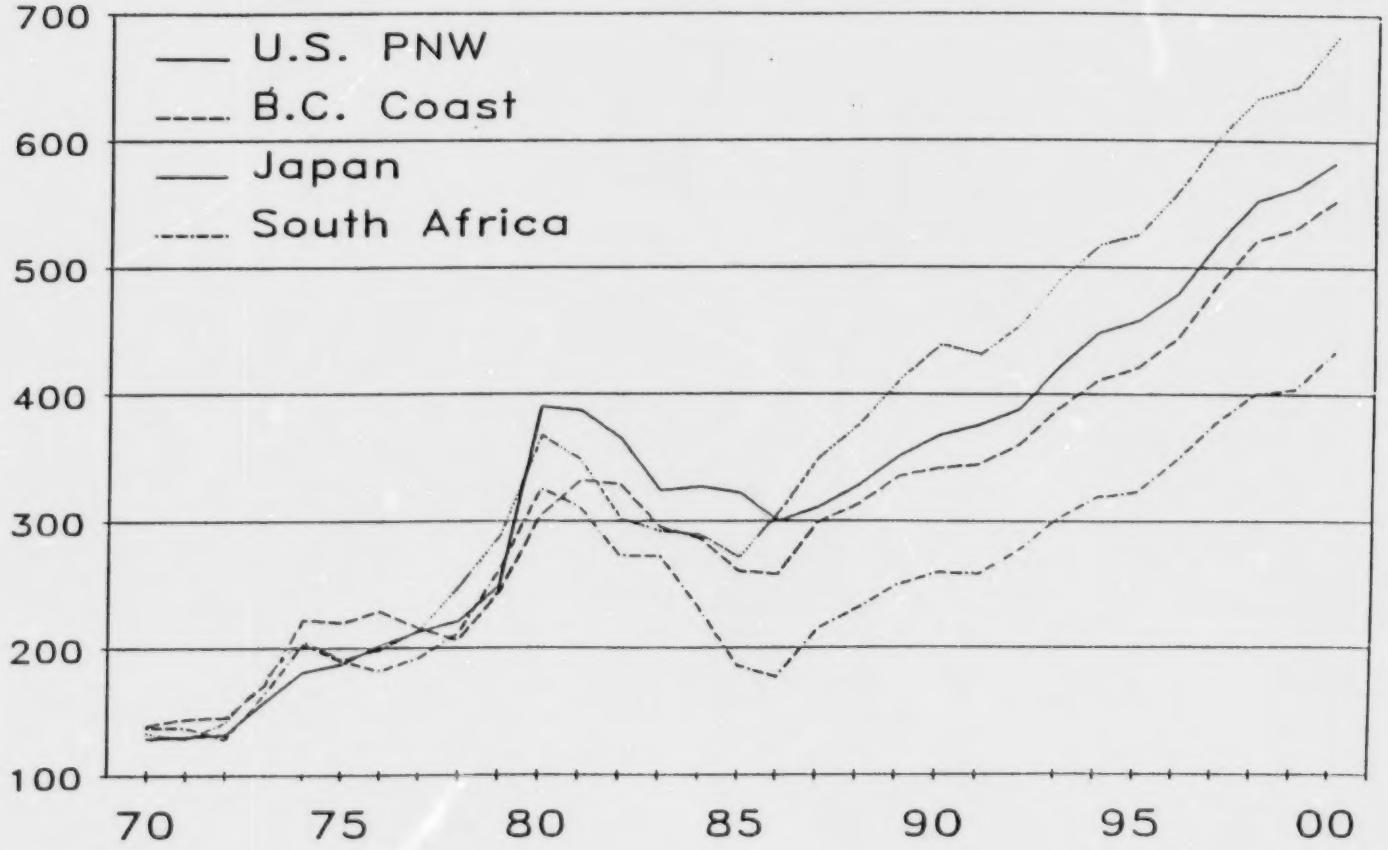

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TABLE 10
SUMMARY OF IMPORT SHARES
OF JAPANESE KRAFTLINER MARKET

	1970	1986	2000
UNITED STATES	.98	.75	.61
CANADA	.02	.23	.20
NEW ZEALAND	.00	.01	.07
SOUTH AFRICA	.00	.01	.02
INDONESIA	.00	.00	.06
CHILE	.00	.00	.04

TABLE 11
SUMMARY OF KRAFTLINER VARIABLE PRODUCTION
COSTS DELIVERED INTO THE FAR EAST MARKET
(U.S. DOLLARS PER METRIC TON)

	1970	1986	2000
U.S. SOUTH	130	256	565
U.S. PNW	129	299	610
B.C. COAST	139	247	527
BRAZIL	157	205	467
CHILE	136	205	408
NEW ZEALAND	122	218	471
SOUTH AFRICA	138	178	435
JAPAN	134	304	683

FIGURE 16

Fixed Costs
(U.S. Dollars per Metric Ton)
for 200 G Kraftliner
for Selected Suppliers

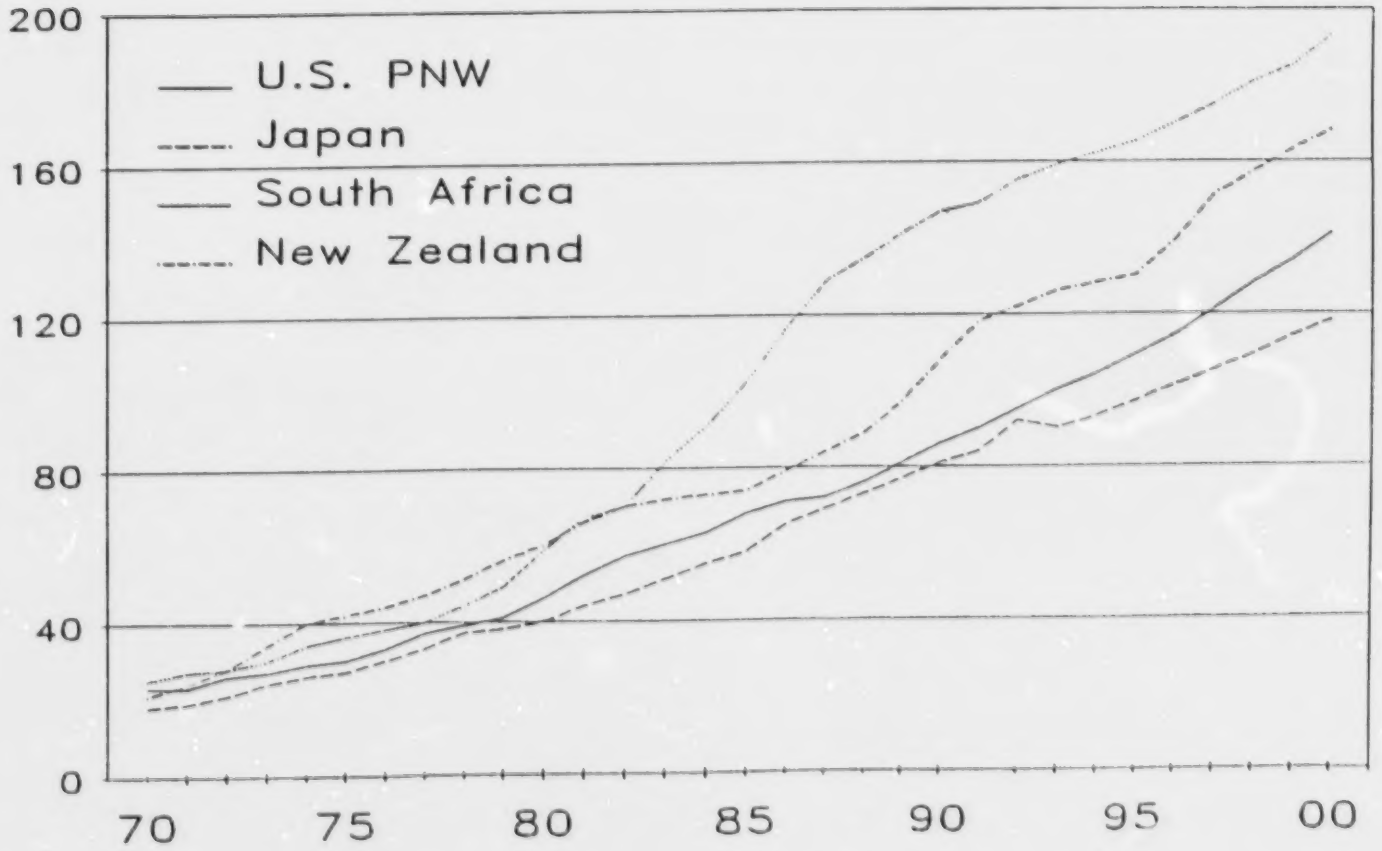

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FIGURE 17

200 G Kraftliner Average Total Costs
(U.S. Dollars per Metric Ton)
Delivered to the Far East Market
for Selected Suppliers

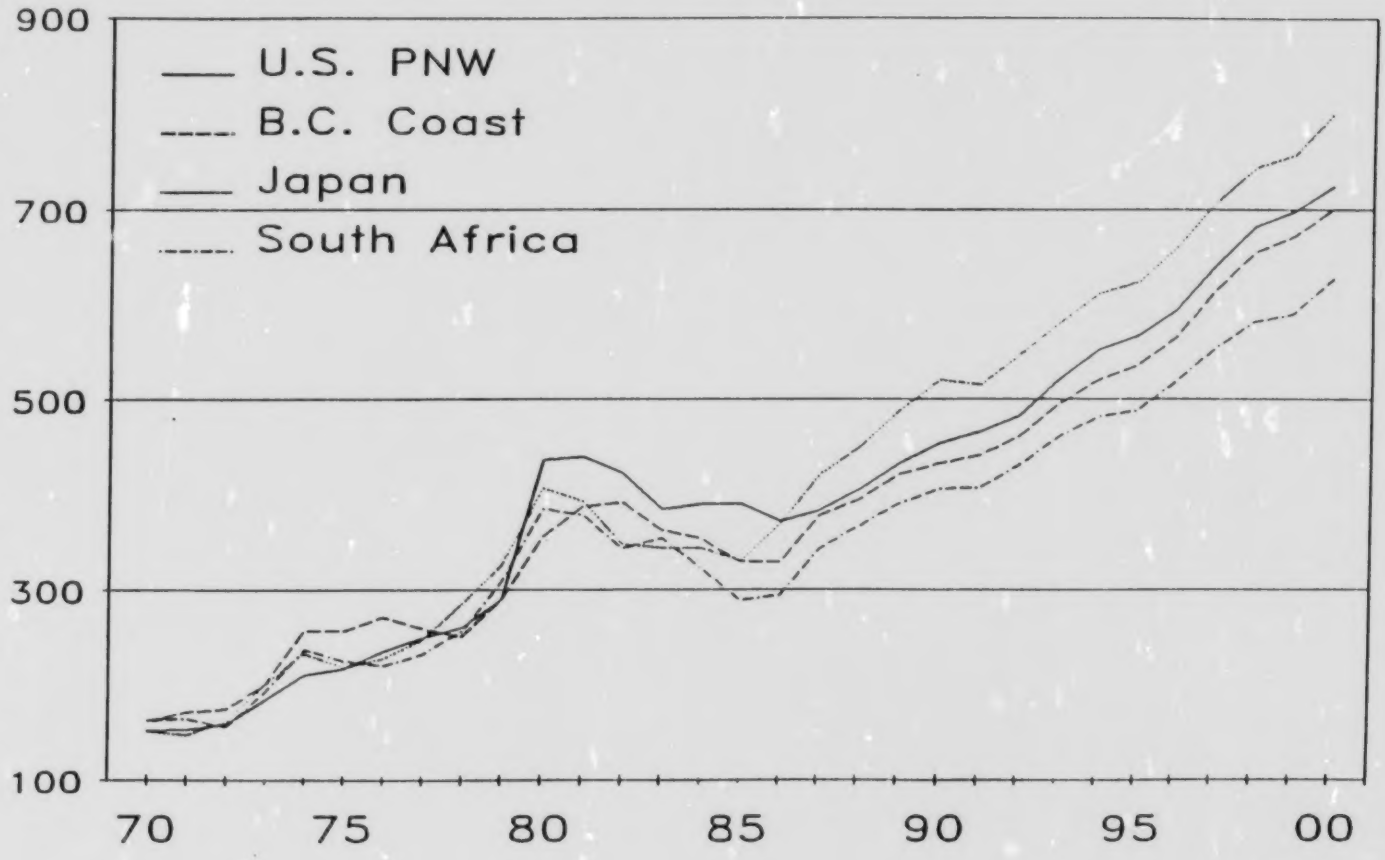

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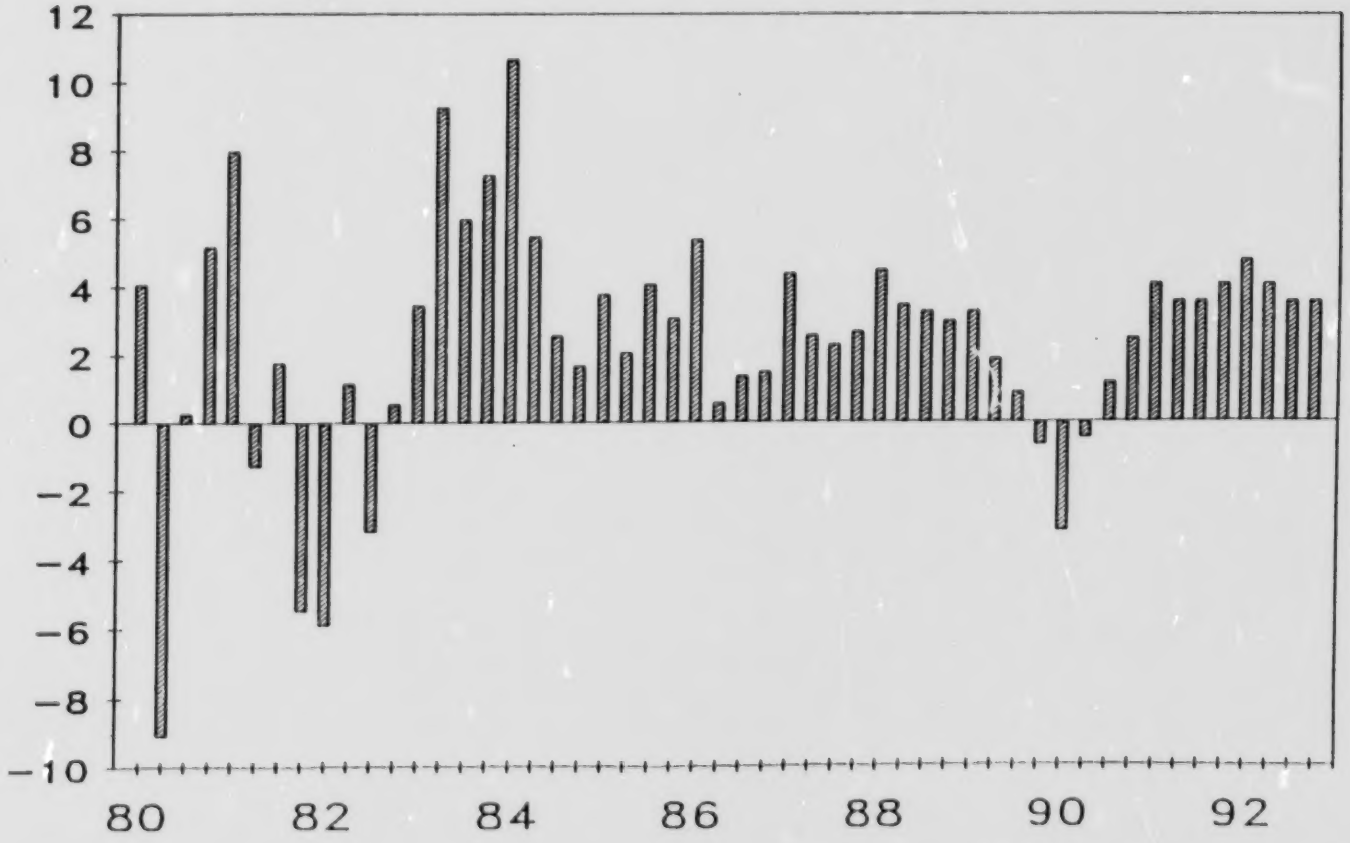
FIGURE 18

Real U.S. GNP Growth, Quarterly % Change, at Annual Rates, 1980–1992



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Housing starts in the United States have benefited from falling interest rates, however this rising trend is not expected to continue into the late 1980s (Figure 19). This is primarily because (1) mortgage rates are up and are unlikely to decline, and (2) the pent-up demand is past as the baby-boomers have been housed. As the population in the U.S. ages, the average family will be spending more on remodelling and second or vacation homes rather than on new homes. Consequently, annual housing starts are predicted to decline through to the end of the century; whereas the expenditures on repairs and alterations are predicted to rise (Figure 20). As a result, the growth in demand for solid wood products in the 1990s will stem predominately from the increased expenditures on repairs & alterations and not from residential construction.

In Western Europe, a general slowdown in the economy has occurred this year. This is primarily due to the decline in exports which resulted from the currency appreciation vis-a-vis the U.S. dollar. However, the consumer sectors are still performing very well. The European economic growth should accelerate in 1988-1989 as more stimulative fiscal policies are introduced and adjustments to higher currency levels are made. Nevertheless, GDP growth is not expected to surpass 3%/year.

Japan's economic growth has remained subdued in 1987 primarily because of the impact of the strong yen on exports. However, domestic growth has picked up and will continue to rebound. This rebound will be aided by (1) more stimulative fiscal polices, and (2) stabilization of exports as worldwide economies are revised and the yen stabilizes. As a result, housing starts in Japan are predicted to remain strong; reaching approximately 1.75 million in 1989. Again, however, GNP growth is not expected to surpass 3%/year in the near future.

Housing starts in Canada were very strong in 1987; reaching about 229,000. However, housing starts are expected to decline to 1990 and then begin increasing again in 1992 (Figure 21).

Conclusions:

The United States' economy is expected to slow down modestly in 1989 - 1990 causing housing starts to decline. Annual housing starts will continue to slide throughout the rest of the century, reaching about 1.35 million in the year 2000 which is down considerably from the 1986 level of 1.82 million. However, expenditures on repairs and alterations are predicted to continue to increase as the aging population purchases second or vacation homes and remodels existing homes.

In Western Europe and Japan, GNP growth is expected to remain at a steady 3%/year. Nevertheless, the consumer sectors in these regions will continue to remain strong as worldwide exchange rates stabilize and stimulative fiscal policies are initiated.

Finally, housing starts in Canada are expected to decline in 1988-1990 since its economy will be influenced by the predicted recession in the United States. However, housing starts are expected to rise gradually in the early 1990s as the North American economy grows out of its recession.

FIGURE 19

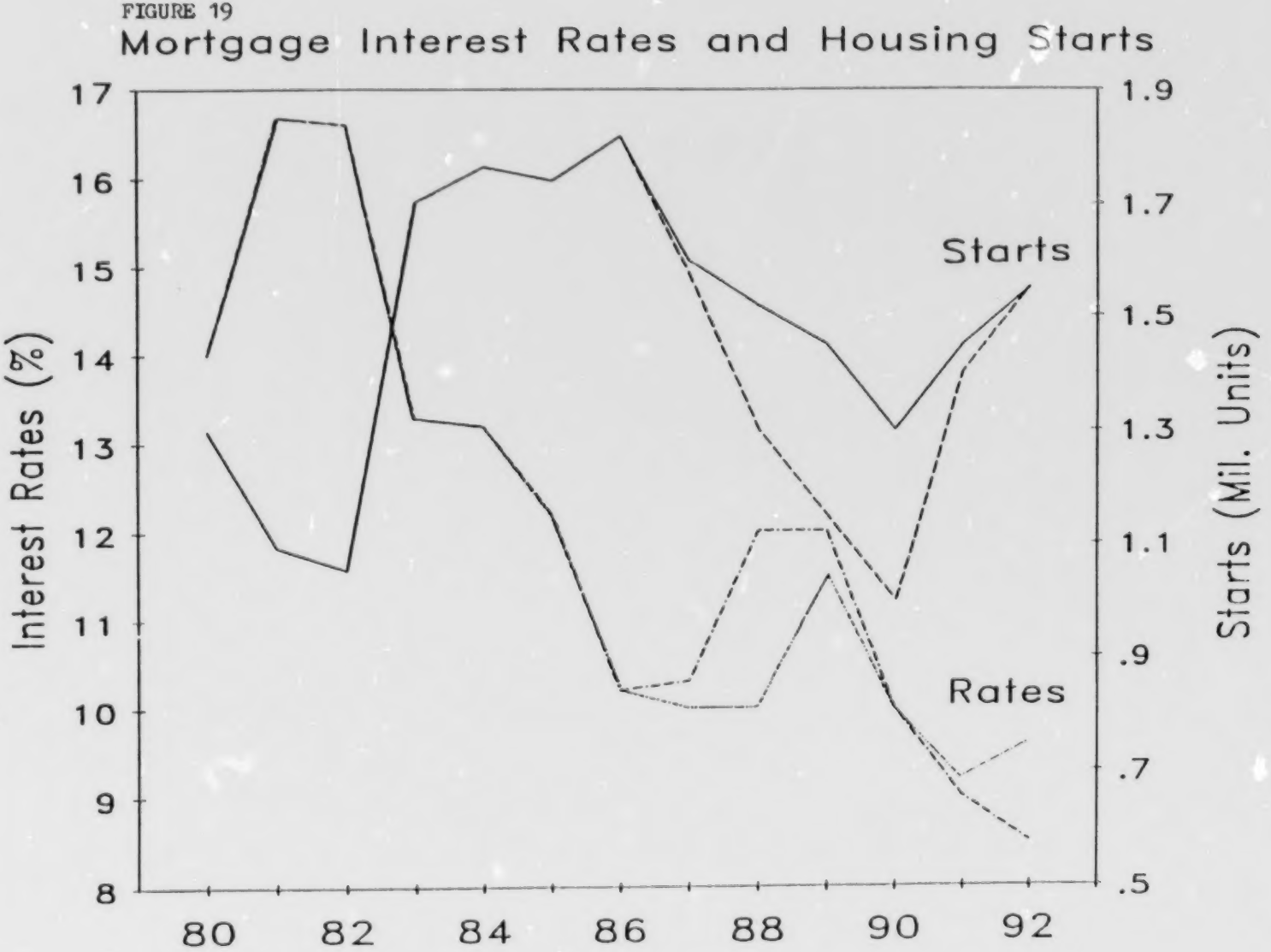

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FIGURE 20

Housing Starts (Millions) and Residential Repairs and Alterations ($82, Bil.)

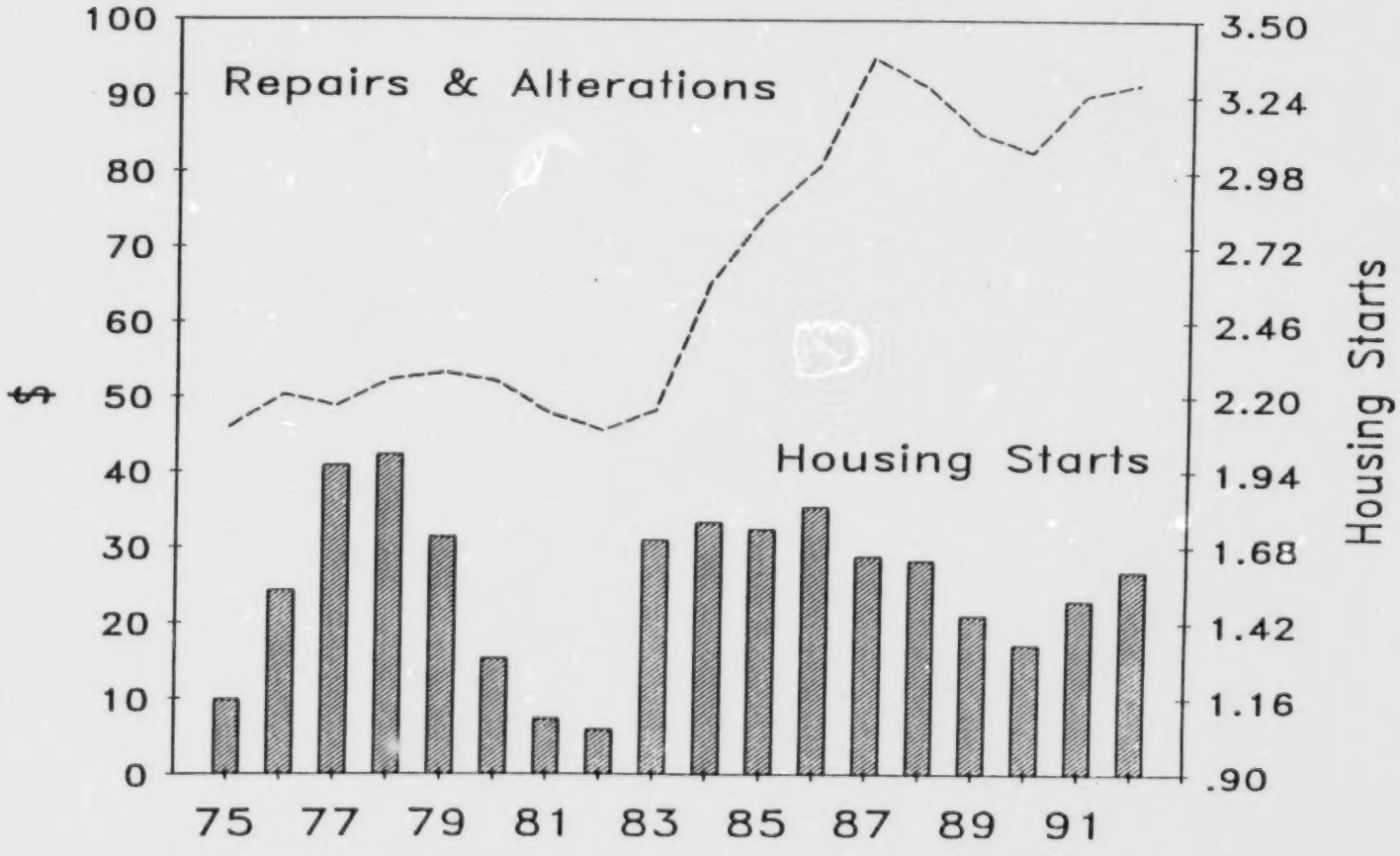

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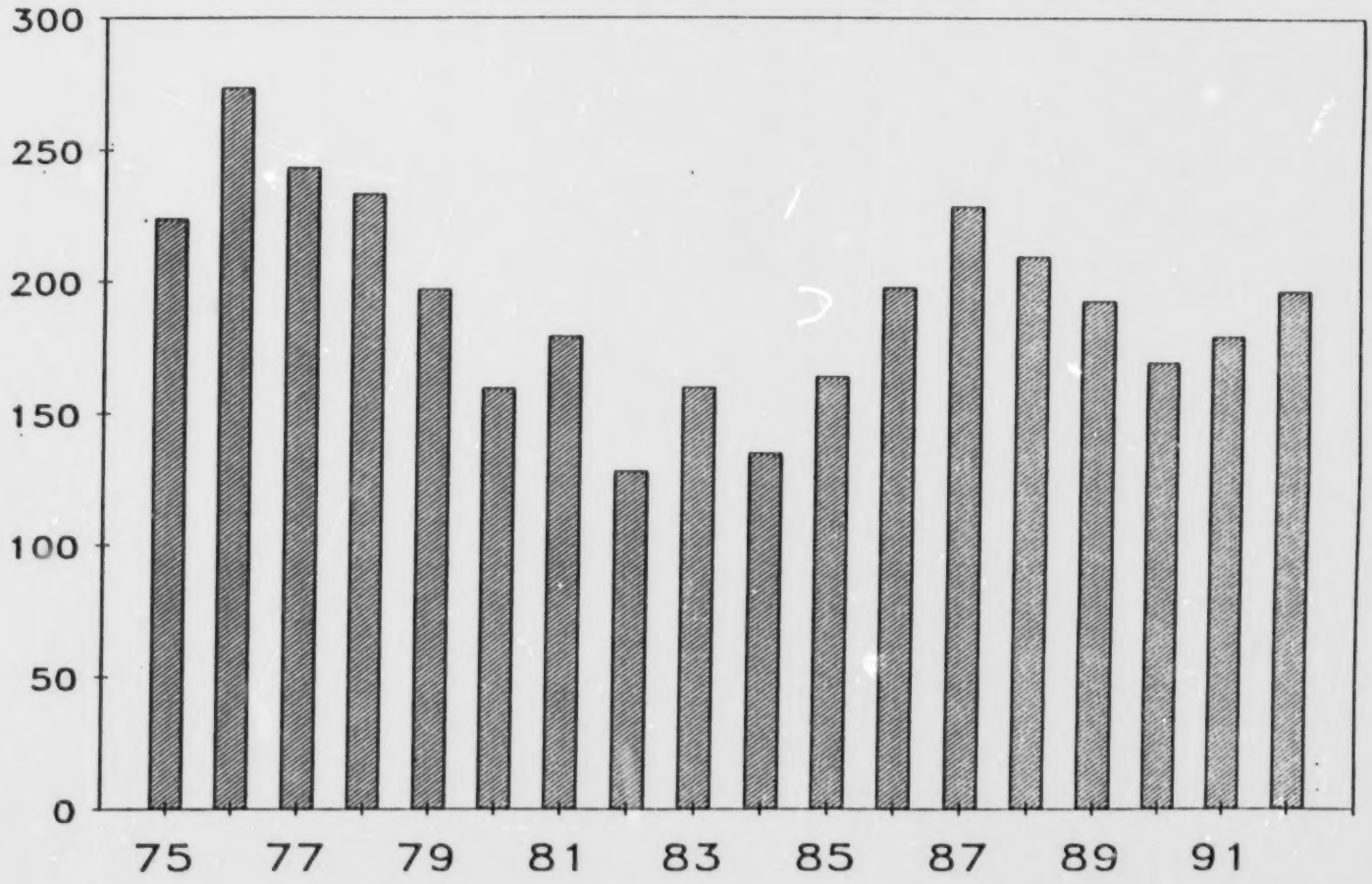
FIGURE 21

Canadian Housing Starts (000s)



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North American Softwood Lumber Outlook

Robert Berg
Vice President
RISI

Introduction:

This outlook for softwood lumber examined (1) softwood lumber demand, (2) softwood lumber productive capacity, (3) production costs, and (4) prices to the year 1992 and 2000 in North America.

Analysis:

Softwood Lumber Demand: The demand for U.S. softwood lumber is predicted to decline slightly during 1988-1990 as the economy enters a recession. However, lumber demand will rebound to 50.5 BBF by 1992. The strongest growth is predicted to come from the repairs and alterations end-use and not from the traditional residential construction end-use (Table 12). Figure 22 illustrates that the residential share of total U.S. lumber demand has been declining steadily since 1950. Table 13 shows the anticipated levels of total North American lumber demand to 1992 and shows the distribution of the demand between U.S. consumption, Canadian consumption and overseas exports. Total consumption of softwood lumber in North America is expected to decline over the 1989-1990 but rising to 61.2 BBf by 1992.

Softwood Lumber Productive Capacity: Total North American softwood lumber capacity was 67.3 BBF in 1985 and is expected to reach 71.4 BBF by 1990. However, production capacity is predicted to remain fairly constant through to the end of the century (Figure 23). Figure 24 illustrates the distribution of North American softwood lumber capacity to the year 2000. Softwood lumber capacity is predicted to increase gradually in Canada and the U.S. south. In the U.S. West, however, production capacity is expected to decline significantly. This is primarily due to the expected tightening timber supplies thus higher stumpage rents.

Production Costs: Table 14 is a cost profile of the North American softwood lumber industry. Costs are provided at the regional level. Quebec sawmills are the lowest cost producers of softwood lumber in North America. British Columbia mills are the second lowest. The RISI forecast to 1992 shows that Canadian mills will remain the low-cost producers of softwood lumber vis-a-vis producers on the U.S. West Coast and South. Even with the 15% export tariff, Canadian producers are expected to remain the lowest cost producers.

North American Softwood Lumber Prices: Table 15 demonstrates recent trends (1979-1986) and future projections (1987-1992) of North American softwood lumber prices in nominal and real (1986) dollars. Prices for all lumber categories have declined since their peak levels in the 1970s. However, prices did rebound in 1986 and 1987 but still not as high as in the 1970s. Prices in all lumber categories are expected to decline in 1988-1990 as economic growth in North America declines. Prices are expected to rise again in the early 1990s as the economy begins to revive.

TABLE 12
U.S. SOFTWOOD LUMBER DEMAND BY END USE (BBF)

	1978	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
TOTAL U.S.	42.4	31.2	38.7	43.3	44.9	47.4	48.3	47.7	46.3	44.7	47.9	50.5
RESIDENTIAL	18.7	9.2	15.1	16.1	16.2	17.7	16.4	15.8	14.8	13.5	15.2	16.4
NONRESIDENTIAL	2.8	2.5	2.5	3.0	3.3	3.3	3.4	3.2	3.1	3.0	3.1	3.3
REPAIRS & ALTERATIONS	8.6	8.3	8.6	10.2	11.1	11.8	13.4	13.1	12.4	12.3	13.0	13.3
INDUSTRIAL	12.4	11.3	12.5	14.0	14.3	14.6	15.1	15.6	16.0	15.9	16.6	17.5
GROWTH												
TOTAL		-7.1%	24.0%	11.8%	3.6%	5.6%	1.9%	-1.2%	-2.9%	-3.5%	7.2%	5.4%
RESIDENTIAL		16.2%	64.1%	6.6%	0.6%	9.3%	-7.3%	-3.7%	-6.3%	-8.8%	12.6%	7.9%
NONRESIDENTIAL		-2.8%	0.0%	20.0%	10.0%	0.0%	3.0%	-5.9%	-3.1%	-3.2%	3.3%	6.5%
REPAIRS & ALTERATIONS		-3.4%	3.6%	18.6%	8.8%	6.3%	13.6%	-2.2%	-5.3%	-0.8%	5.7%	2.3%
INDUSTRIAL		-2.2%	8.8%	12.2%	2.0%	0.4%	3.4%	3.3%	2.6%	-0.6%	4.4%	5.4%

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FIGURE 22

Residential Construction End Use Demand and Share of U.S. Softwood Lumber Demand

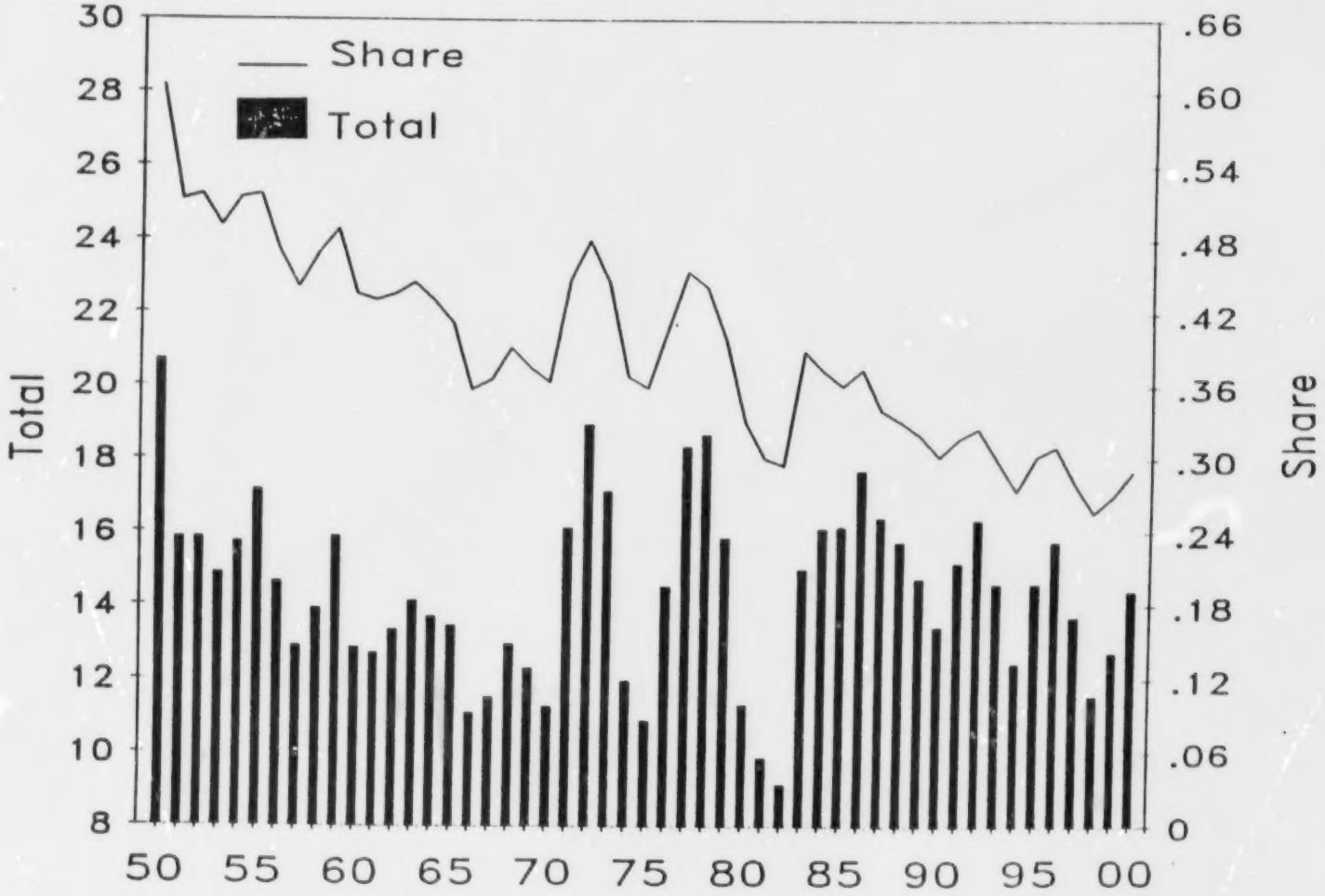

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TABLE 13
NORTH AMERICAN SOFTWOOD LUMBER DEMAND
(BBF)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
LEVEL:											
DEMAND, NORTH AMERICA	40.0	48.0	52.4	53.9	57.0	59.2	59.2	57.5	55.2	58.4	61.2
U.S. CONSUMPTION	31.2	38.7	43.3	44.9	47.4	48.3	47.7	46.3	44.7	47.9	50.5
CANADIAN CONSUMPTION	5.1	5.5	5.4	5.8	6.0	6.6	6.8	6.8	6.4	6.6	7.1
U.S. OVERSEAS EXPORTS	1.4	1.3	1.3	1.2	1.5	1.8	1.8	1.5	1.3	1.2	1.0
CANADIAN OVERSEAS EXPORTS	2.3	2.4	2.5	2.0	2.0	2.5	2.9	2.9	2.8	2.7	2.6
GROWTH:											
DEMAND, NORTH AMERICA	-5.4%	20.0%	9.3%	2.7%	5.7%	3.9%	0.0%	-2.9%	-4.0%	5.8%	4.8%
U.S. CONSUMPTION	-5.2%	24.1%	11.9%	3.7%	5.6%	1.9%	-1.2%	-2.9%	-3.5%	7.2%	5.4%
CANADIAN CONSUMPTION	-13.6%	8.9%	-2.0%	6.3%	4.7%	10.0%	3.0%	0.0%	-5.9%	3.1%	7.6%
U.S. OVERSEAS EXPORTS	0.0%	-4.3%	-4.0%	-4.1%	24.5%	20.0%	0.0%	-16.7%	-13.3%	-7.7%	-16.7%
CANADIAN OVERSEAS EXPORTS	9.5%	4.1%	1.7%	-17.8%	0.8%	25.0%	16.0%	0.0%	-3.4%	-3.6%	-3.7%

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FIGURE 23

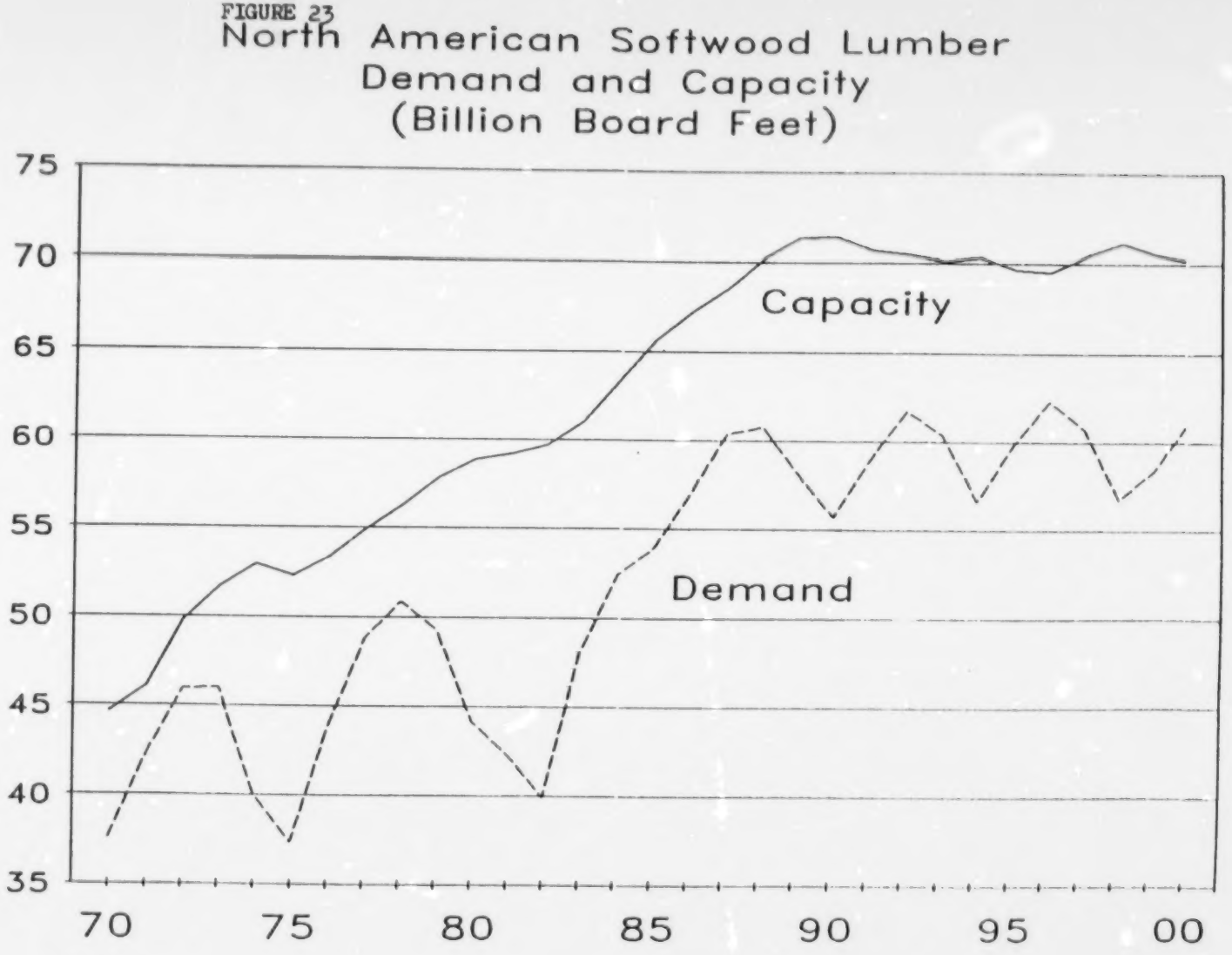

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FIGURE 24

Distribution of North American Softwood Lumber Capacity

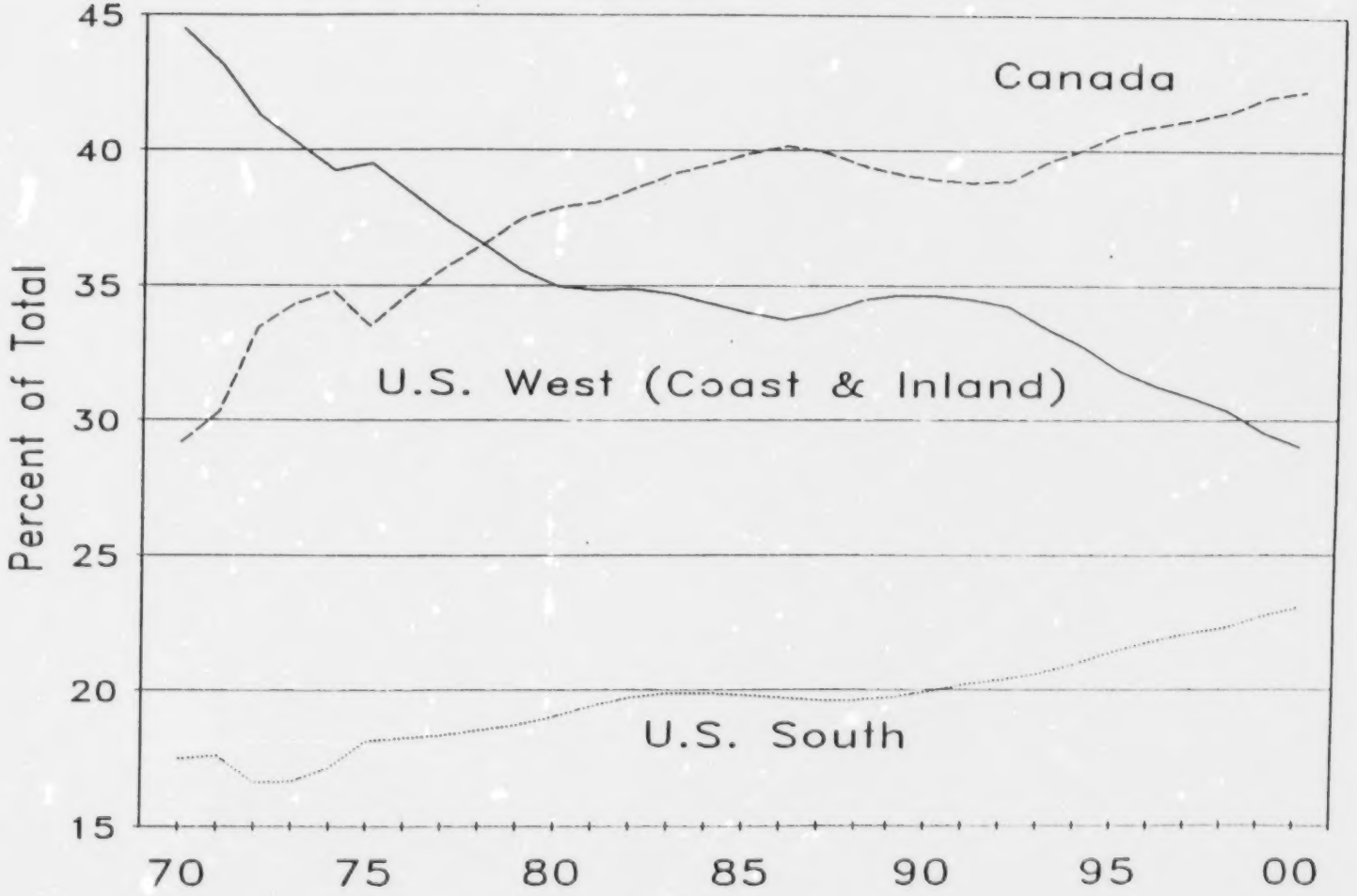

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TABLE 14
SOFTWOOD LUMBER MILL MANUFACTURING COSTS

$/MBF, NOMINAL AND REAL (1986 BASE)

	U.S. WEST COAST		U.S. SOUTH		CANADIAN COSTS (U.S. DOLLARS)			
					BRITISH COLUMBIA		QUEBEC	
	NOMINAL	REAL	NOMINAL	REAL	NOMINAL	REAL	NOMINAL	REAL
ANNUAL AVERAGES								
1982	224	224	178	178	140	140	131	131
1983	221	219	176	174	143	141	144	143
1984	215	208	176	171	135	131	135	130
1985	184	178	163	157	124	120	124	119
1986	155	135	163	163	116	116	114	114
1987	169	164	170	165	133	130	119	116
1988	185	170	175	161	134	127	118	112
1989	212	184	197	171	135	122	117	105
1990	215	180	194	162	134	117	116	102
1991	222	179	188	152	138	117	115	98
1992	231	178	203	156	149	121	130	105
1970-1974	102	256	94	236	84	215	84	215
1975-1979	201	316	142	223	120	193	118	191
1980-1984	241	248	180	184	145	149	140	144
1985-1990	187	172	177	163	129	122	118	111

* FOR CANADIAN $ COSTS A CANADIAN DEFLATOR WAS USED; FOR U.S. $ A U.S. DEFLATOR WAS USED.

TABLE 15
NORTH AMERICAN SOFTWOOD LUMBER PRICES

(NOMINAL AND REAL 1986 $)

NOMINAL:	1979	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992
S-P-F (WESTERN) 2X4*	225	140	185	153	153	184	199	185	165	150	157	194
S-P-F (EASTERN, G.L.) 2X4*	278	211	262	238	235	269	291	268	255	244	255	298
S-Y-P (WESTSIDE) 2X4	252	207	259	230	221	220	258	237	224	209	219	266
HEM-FIR (INLAND) 2X4	254	173	218	191	191	215	230	217	215	200	211	253
DOUG-FIR (GRN, PTD) 2X4	263	153	205	183	184	180	199	189	180	173	184	224
REAL(1986$):												
S-P-F (WESTERN) 2X4*	297	140	183	148	148	184	193	171	143	126	127	149
S-P-F (EASTERN, G.L.) 2X4*	367	211	259	230	227	269	282	247	221	204	206	229
S-Y-P (WESTSIDE) 2X4	333	207	256	223	213	220	250	218	194	175	177	205
HEM-FIR (INLAND) 2X4	335	173	216	185	184	215	223	200	186	168	171	195
DOUG-FIR (GRN, PTD) 2X4	347	153	203	177	177	180	193	174	156	145	149	172

* INCLUDES TARIFF (15%)

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Conclusions:

Consumption of softwood lumber in North America has increased from 40 BBF in 1982 to 57 BBF in 1986. Consumption is predicted to increase to 59.2 BBF in 1987 and 1988 but decline to 55.2 BBF by 1990 as economic growth in North America declines. Softwood lumber consumption is expected, however, to rebound to 61.2 BBF in 1992.

The structure of the softwood lumber market is expected to continue to change. The residential construction (i.e., new homes) share of U.S. softwood lumber consumption has been steadily declining since 1950 and this trend is expected to continue to the year 2000.

On the supply side, production capacity of softwood lumber in North America is predicted to stabilize at about 70 BBF over the 1990-2000 period. The decline in production capacity in the western U.S. regions will be offset by the increase in production capacity in Canada and southern U.S. regions.

Canadian producers are expected to remain the low-cost lumber producers throughout this century even with the 15% export tax.

Finally, softwood lumber prices are expected to decline slightly in 1988-1990 for all lumber categories as the consumption of North American lumber declines during this period. However, as the economy revives so will lumber prices.

North American Panel Markets - Short-Run Outlook

Bernard Fuller
Vice President
RISI

Introduction:

This outlook presentation examined (1) plywood, (2) OSB/waferboard, (3) particleboard, (4) MDF, and (5) hardboard markets to the year 1992. Information was provided on recent trends and forecasts of demand, supply, price and trade conditions for each of the aforementioned products.

Analysis:

Structural Panels: Structural panel products are defined to include veneered (rough and sanded plywood) and non-veneered (OSB and waferboard) panels. The total structural panel market is expected to grow in the near future owing to a slight growth in use-factors and an overall growth in the economy. The strongest growth is predicted to come from an increase in expenditures on repairs and alterations on homes. Expenditures on repairs and alterations are predicted to increase because of two reasons. First, equity lines of credit will make it easier and cheaper for the average homeowner to add on. Secondly, as the baby boomers age, they will add on and upgrade existing homes rather than purchasing new ones. The increase in demand stemming from the repairs and alterations end-use is demonstrated in Table 16

Total demand for structural panels in the United States is expected to

TABLE 16
U.S. STRUCTURAL PANEL DEMAND BY END USE (BSF, 3/8-INCH)

	1978	1982	1985	1986	1987	1988	1989	1990	1991	1992
TOTAL U.S. DEMAND	20.8	16.6	23.9	25.9	27.1	27.5	25.4	25.0	26.7	28.0
RESIDENTIAL	10.3	5.5	9.3	10.3	10.0	10.1	8.8	8.2	9.2	9.9
NONRESIDENTIAL	2.0	2.1	2.7	2.7	2.7	2.7	2.6	2.6	2.6	2.8
REPAIRS & ALTERATIONS	5.1	5.3	7.6	8.3	9.5	9.5	8.8	9.1	9.7	9.7
INDUSTRIAL	3.1	3.3	4.0	4.1	4.2	4.5	4.6	4.6	4.8	5.1
EXPORTS	0.3	0.5	0.3	0.6	0.6	0.6	0.6	0.5	0.4	0.5
SHARES	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
RESIDENTIAL	50%	33%	39%	40%	37%	37%	35%	33%	34%	35%
NONRESIDENTIAL	9%	12%	11%	10%	10%	10%	10%	10%	10%	10%
REPAIRS & ALTERATIONS	24%	32%	32%	32%	35%	35%	35%	36%	36%	35%
INDUSTRIAL	15%	20%	17%	16%	16%	16%	18%	18%	18%	18%
EXPORTS	2%	3%	1%	2%	2%	2%	2%	2%	1%	2%

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increase from 25.9 BSF (billion square feet) in 1986 to 28 BSF by 1992 (see Table 16). Furthermore, Figure 25 shows that total structural panel demand will reach 30 BSF by the year 2000. However, the types of panels satisfying this demand are changing. Table 17 shows that the demand for sanded plywood is expected to increase yet its market share will remain stable. Demand for rough plywood is also expected to increase but its market share is forecasted to decrease to 54% by 1992. Plywood's declining market share is being offset by non-veneered panels. Demand for OSB/waferboard in the U.S. is predicted to grow to 8.7 BSF by 1992 which is a 107% increase from 1986.

Total Canadian structural panel demand is expected to grow from 3.78 BSF in 1986 to 5.17 BSF in 1992 (Table 18). Plywood demand will decline; however, its decrease will be more than offset by the increase in non-veneered structural panel demand.

The recent increase of total structural panel market share by OSB/waferboard has been predominately due to their interchangeability with plywood and the lower variable costs of production to produce them compared to plywood. The lower costs are due to (1) better utilization of resins, (2) thickness to thickness performance, (3) its use of hardwoods, and (4) better flaking (less waste). Recently, however, technological cost-reducing developments have also occurred in plywood manufacturing. Developments such as (1) the ability to use smaller logs and cores, (2) better resin use (foaming glues), and (3) more mechanization (lower labor costs). Nevertheless, as Figure 26 illustrates, it is predicted that OSB/waferboard industries will continue to produce their product at lower variable costs compared to plywood industries.

Table 19 shows that total U.S. structural panel capacity is predicted to increase from 29.9 BSF in 1986 to 32.3 BSF in 1992. However, plywood capacity is expected to decline by 2.0 BSF over the 1986-1992 period. Therefore, the total capacity increase will stem entirely from the expected 110% growth of OSB/waferboard capacity.

RISI's forecasts of Canadian structural panel capacity are illustrated in Table 20. Capacity of plywood is expected to decline to 2.4 BSF by 1992 which is only down 0.1 BSF from 1986; however, since the total panel capacity is predicted to increase from 4.2 BSF in 1986 to 6.1 BSF in 1992, that amounts to a 20% reduction in total share for plywood. OSB/waferboard capacity is predicted to increase to 3.7 BSF by 1992 which is up 2.0 BSF from 1986.

U.S. imports of Canadian OSB/waferboard are expected to increase from 0.73 BSF in 1986 to 1.43 BSF in 1992. Finally, Table 21 indicates that both the price of Southern Yellow pine plywood and waferboard are expected to gradually increase in the 1990s. Prices of West Coast plywood, however, are expected to decline slightly, then begin increasing in the early 1990s.

Particleboard: Table 22 shows the demand for U.S. particleboard. The particleboard industry has experienced its best year ever in 1987. Particleboard prices and demand were high in 1987. The demand for particleboard is predicted to continue to increase, reaching a level of 4.14 BSF by 1992.

In Canada, particleboard demand is also expected to increase in the short-term. Table 23 shows that the demand for Canadian particleboard is expected to reach 0.806 BSF by 1992. The increase in demand has been primarily domestic driven; not export driven.

FIGURE 25
U.S. Structural Panel Demand by End Use
(BSF, 3/8-Inch)

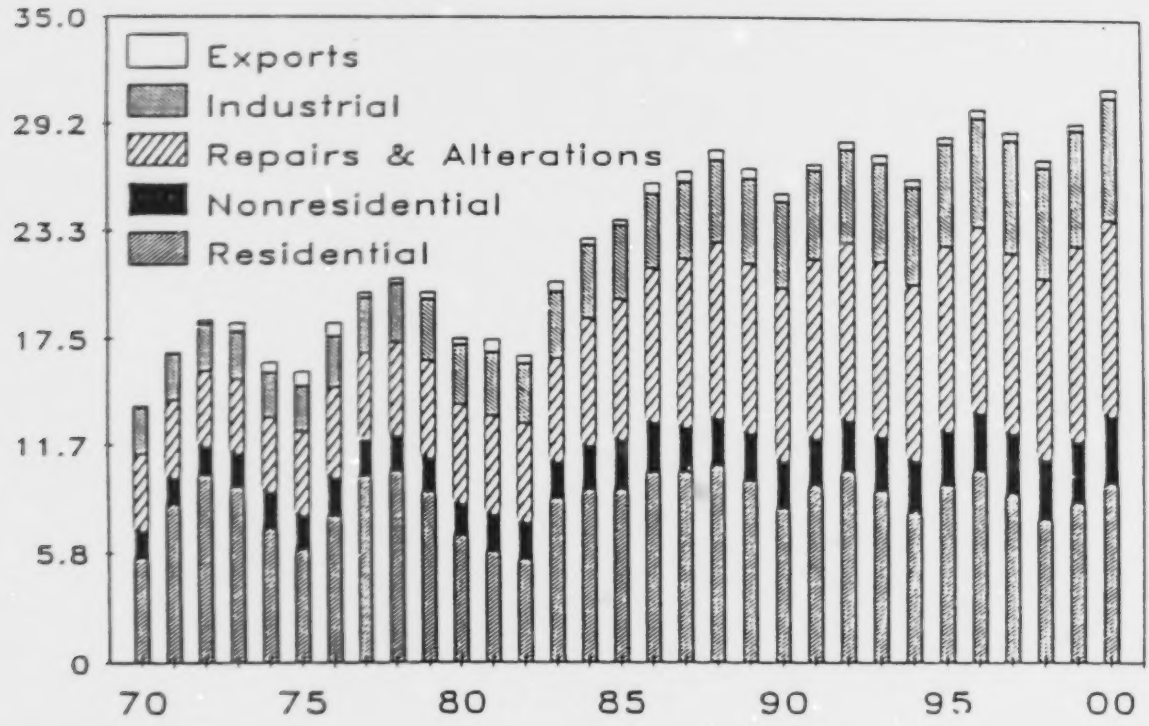

TABLE 17
U.S. STRUCTURAL PANEL DEMAND
BY PANEL TYPE
(BSF, 3/8-INCH)

	1978	1982	1985	1986	1987	1988	1989	1990	1991	1992
PLYWOOD - ROUGH	16.6	12.6	16.6	17.7	18.3	18.0	15.9	14.8	14.7	15.1
- SANDED	3.6	3.1	3.8	4.0	4.1	4.2	4.2	4.1	4.2	4.3
- TOTAL	20.2	15.7	20.4	21.7	22.4	22.2	20.1	18.9	18.9	19.4
WAFERBOARD/OSB	0.6	0.9	3.5	4.2	4.7	5.3	5.4	6.1	7.7	8.7
TOTAL PANELS	20.8	16.6	23.9	25.9	27.1	27.5	25.5	25.0	26.6	28.1
SHARES										
PLYWOOD - ROUGH	80%	76%	70%	68%	67%	65%	62%	59%	53%	54%
- SANDED	17%	18%	16%	15%	15%	15%	16%	16%	16%	15%
- TOTAL	97%	94%	86%	84%	82%	80%	78%	75%	71%	69%
WAFERBOARD/OSB	3%	6%	14%	16%	18%	20%	22%	25%	29%	31%

TABLE 18
CANADIAN STRUCTURAL PANEL DEMAND
(BSF, 3/8-INCH)

	1980	1985	1986	1987	1988	1989	1990	1991	1992
TOTAL DEMAND	3.34	3.84	3.78	4.11	4.48	4.63	4.49	4.70	5.17
WAFERBOARD/OSB	0.64	1.53	1.52	1.79	2.10	2.32	2.43	2.71	3.12
% OF TOTAL	19%	40%	40%	44%	47%	50%	54%	58%	60%
PLYWOOD	2.70	2.31	2.26	2.32	2.38	2.31	2.06	1.99	2.05
% OF TOTAL	81%	60%	60%	56%	53%	50%	46%	42%	40%
% OF WFBD/OSB CONSUMED IN CANADA	47%	42%	51%	59%	53%	50%	49%	52%	52%
% OF PLYWOOD CONSUMED IN CANADA	79%	80%	86%	87%	86%	81%	80%	79%	78%

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FIGURE 26

Total Plywood & Waferboard Costs Compared
($/MSF, 3/8-Inch)

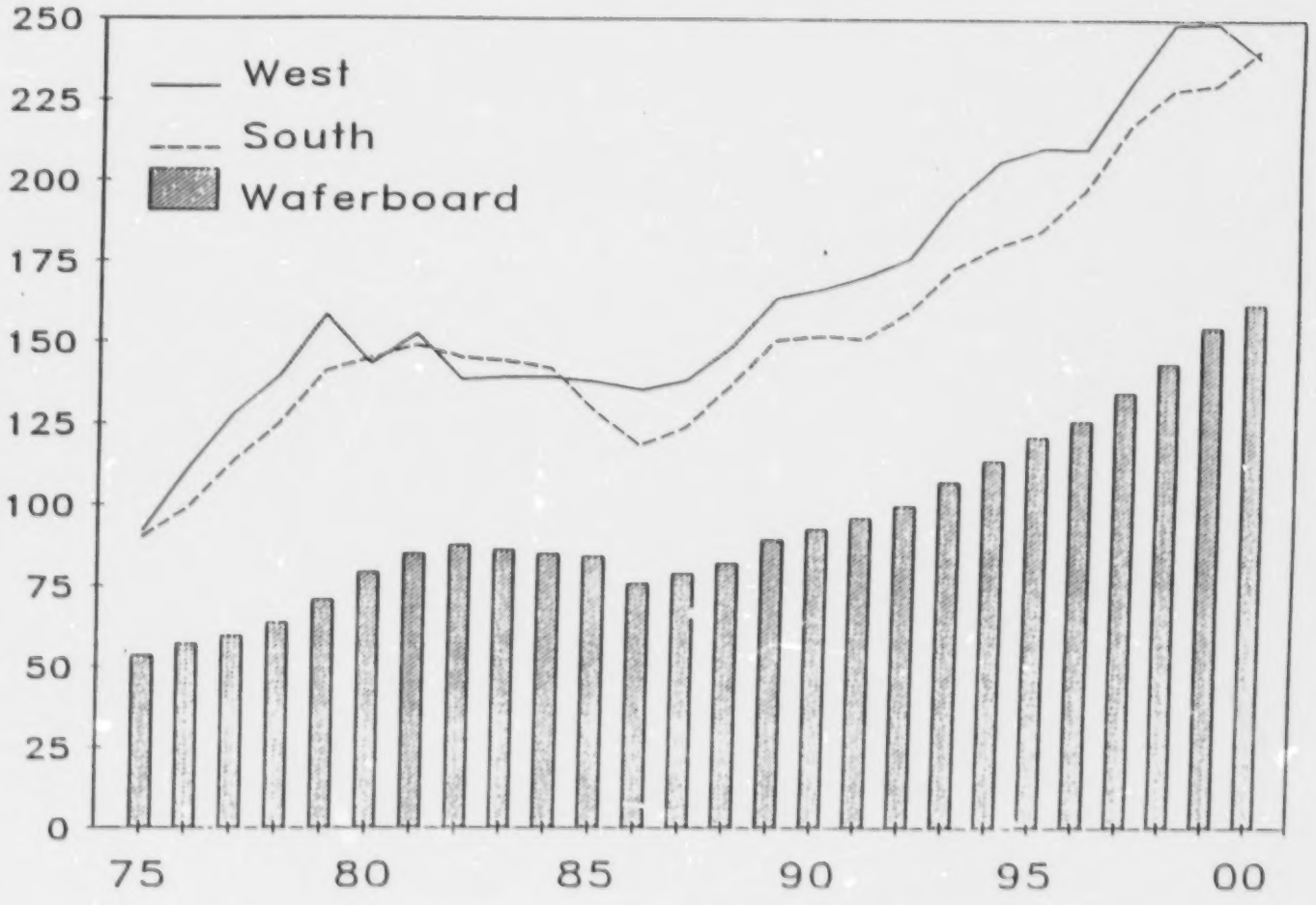

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TABLE 19
U.S. STRUCTURAL PANEL CAPACITY
-BSF, 3/8-INCH-

	1978	1985	1986	1987	1988	1989	1990	1991	1992
TOTAL PLYWOOD	23.1	25.6	25.9	26.2	26.6	26.5	25.8	24.8	23.9
ROUGH - TOTAL	18.6	20.2	20.4	20.7	21.1	21.0	20.4	19.4	18.6
- WEST	10.1	9.0	9.0	9.2	9.4	9.3	9.0	8.5	8.1
- SOUTH	8.5	11.2	11.4	11.5	11.7	11.7	11.4	10.9	10.5
SANDED	4.6	5.4	5.5	5.5	5.5	5.5	5.4	5.4	5.3
WAFERBOARD/OSB									
TOTAL	0.3	3.3	4.0	4.7	5.3	6.3	7.4	7.9	8.4
NOE	0	0.5	0.6	0.6	0.6	0.7	0.7	0.7	0.7
NOC	0.1	1.5	1.6	1.8	2.1	2.7	3.2	3.4	3.6
SO	0.1	0.9	1.3	1.8	2.0	2.3	2.7	2.8	3.0
WT	0.1	0.4	0.4	0.5	0.6	0.6	0.9	1.0	1.1
TOTAL ALL TYPES	23.4	28.9	29.9	30.9	31.9	32.8	33.2	32.7	32.3

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TABLE 20
CANADIAN STRUCTURAL PANEL CAPACITY
-BSF, 3/8-INCH-

	1978	1985	1986	1987	1988	1989	1990	1991	1992
PLYWOOD	3.2	2.5	2.5	2.5	2.5	2.6	2.6	2.5	2.4
% OF TOTAL	85%	61%	59%	54%	51%	46%	43%	42%	39%
OSB/WAFERBOARD	0.5	1.6	1.7	2.1	2.5	3.0	3.4	3.5	3.7
% OF TOTAL	15%	39%	41%	46%	49%	54%	57%	58%	61%
TOTAL	3.7	4.2	4.2	4.6	5.0	5.6	6.0	6.0	6.1

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TABLE 21
STRUCTURAL PANEL PRICES
($/MSF)

	1985	1986	1987	1988	1989	1990	1991	1992
PLYWOOD								
WEST COAST, 1/2-INCH, 4/5-PLY, CDX								
- FOB	196	208	190	196	193	186	198	219
- DELIVERED CHICAGO	245	252	236	245	242	237	251	274
SYP, 1/2-INCH, 3-PLY, CDX (WESTSIDE)								
- FOB	177	182	181	186	185	179	190	210
- DELIVERED CHICAGO	201	204	203	210	209	204	216	237
WAFERBOARD (24/16)								
7/16-INCH, FOB MILL, NORTH CENTRAL	158	148	149	167	156	141	155	177
7/16-INCH, DELIVERED CHICAGO	173	157	158	177	166	151	166	188

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TABLE 22
U.S. PARTICLEBOARD DEMAND (BSF, 3/4-INCH)

	FURNITURE & FIXTURES & MANUFACTURING*	TOTAL
1976-1980	1.30	3.27
1981-1985	1.24	3.02
1985	1.42	3.45
1986	1.50	3.70
1987	1.59	3.89
1988	1.67	3.99
1989	1.70	3.92
1990	1.66	3.75
1991	1.69	3.94
1992	1.80	4.14
1986-1990	1.62	3.85

*EXCLUDES KITCHEN CABINETS.

TABLE 23
CANADIAN PARTICLEBOARD DEMAND (BSF)

	3/4-INCH	5/8-INCH
1976-1980	0.400	0.430
1981-1985	0.472	0.566
1985	0.603	0.723
1986	0.665	0.798
1987	0.700	0.840
1988	0.711	0.853
1989	0.728	0.874
1990	0.714	0.857
1991	0.751	0.902
1992	0.806	0.967
1986-1990	0.704	0.844

An increase in U.S. particleboard capacity is also expected in the near term, which will stem primarily from the expansion and construction of six plants by 1990. The growing capacity will be predominately situated in the Eastern U.S. since it is the largest market. Particleboard capacity in Canada is also expected to increase as the start up of one new mill has been announced.

Exports of particleboard from the U.S. are predicted to increase from the 1986 level of 0.172 BSF to 0.254 BSF in 1992. These exports will be both to Canada and increasingly offshore. In Canada, exports of particleboard are expected to decline slightly, then rise again by 1990.

Finally, RISI projects that prices of particleboard in the U.S. will increase, reaching $275/MSF in the south and $225/MSF in the west by 1992 (Figure 27). However, variable costs are expected to rise causing a decline in the price/variable cost margins (Figure 28).

Medium Density Fibreboard: The demand for U.S. MDF is predicted to increase from 0.81 BSF in 1986 to 1.09 BSF in 1992. The demand for Canadian MDF is expected to increase from 0.033 BSF in 1986 to 0.154 BSF in 1992. MDF is not a very well known product in Canada (only one MDF mill), thus a education process is required to stimulate the demand for this product. Two new mills, one each in the U.S. and Canada, are currently under construction which will increase production capacity in both countries.

Hardboard: The demand for U.S. hardboard has been declining since 1984 in both siding and nonsiding end-uses (Figure 29). This has been due to a weakness in southern housing markets and competitiion from other materials (e.g., vinyl and waferboard). RISI forecasts a recovery in siding as the southern U.S. economy regains strength and as new and thicker hardboards are developed. Nonetheless, no major recovery in the nonsiding end-use is expected in the short term.

Conclusions:

The demand for U.S. plywood is predicted to decrease from 21.7 BSF in 1986 to 19.4 BSF in 1992 whereas OSB/waferboard demand is expected to increase from 4.2 BSF to 8.7 BSF over the same period. Similar trends are predicted to exist for Canadian structural panels; demand for plywood is expected to decline from 2.26 BSF in 1986 to 2.05 BSF in 1992 and OSB/waferboard demand is predicted to increase by 1.52 BSF to 3.12 BSF over the same period. Total structural panel demand in both the U.S. and Canada are expected to increase over the forecast period. The production of plywood and OSB/waferboard in the U.S. and Canada will follow similar trends as well. Finally, into the 1990s, prices and variable costs of OSB/waferboard are expected to remain lower than those for plywood.

The demand for U.S. particleboard is forecasted to grow 11.9% over the 1986-1992 period or 1.9%/year. The demand for Canadian particleboard is expected to grow 21% over the 1986-1992 period or 3.5%/year. Over the same period, the demand for U.S. MDF is forecasted to grow 35% or 5.1%/year whereas the demand for Canadian MDF will grow by 367% or 61%/year. Finally, the demand for U.S. hardboard has been declining and is not expected to increase significantly over the near term.

FIGURE 27

U.S. Industrial Particleboard Prices
($/MSF, 3/4-Inch)

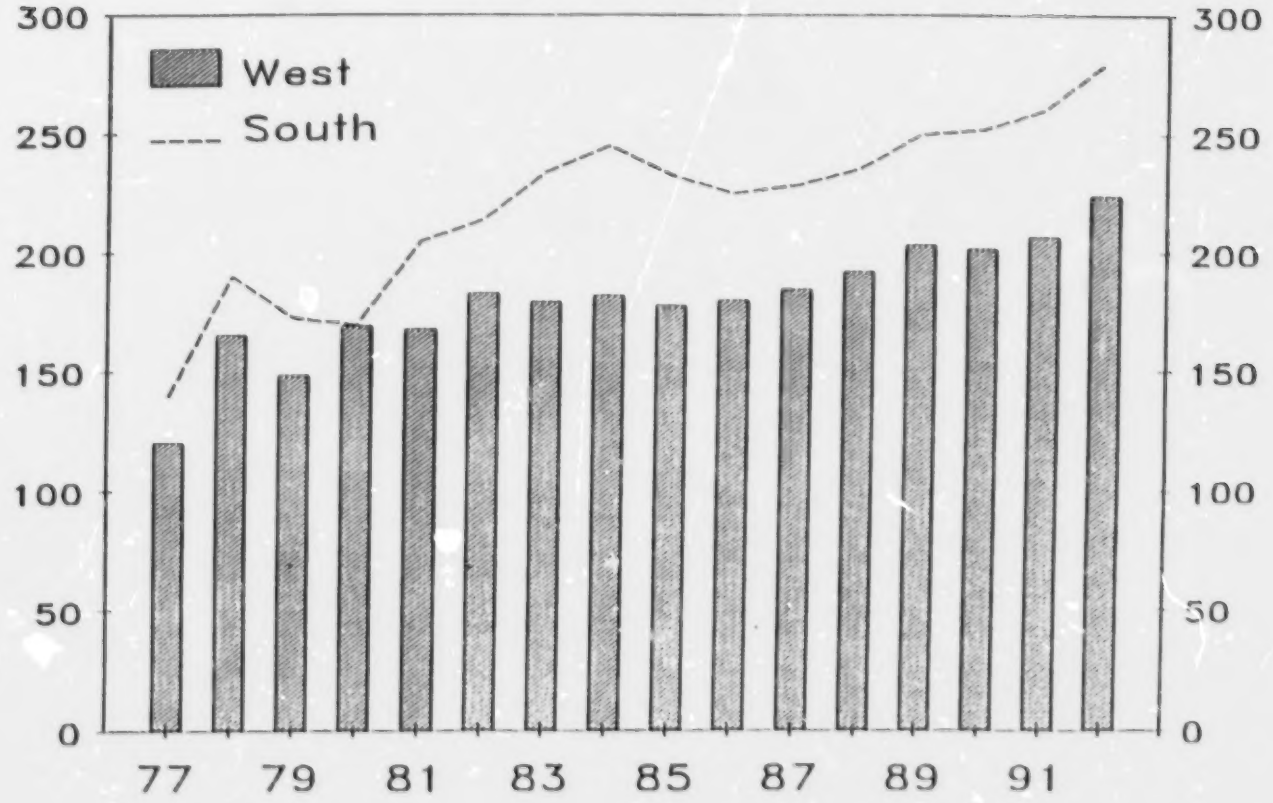

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FIGURE 28

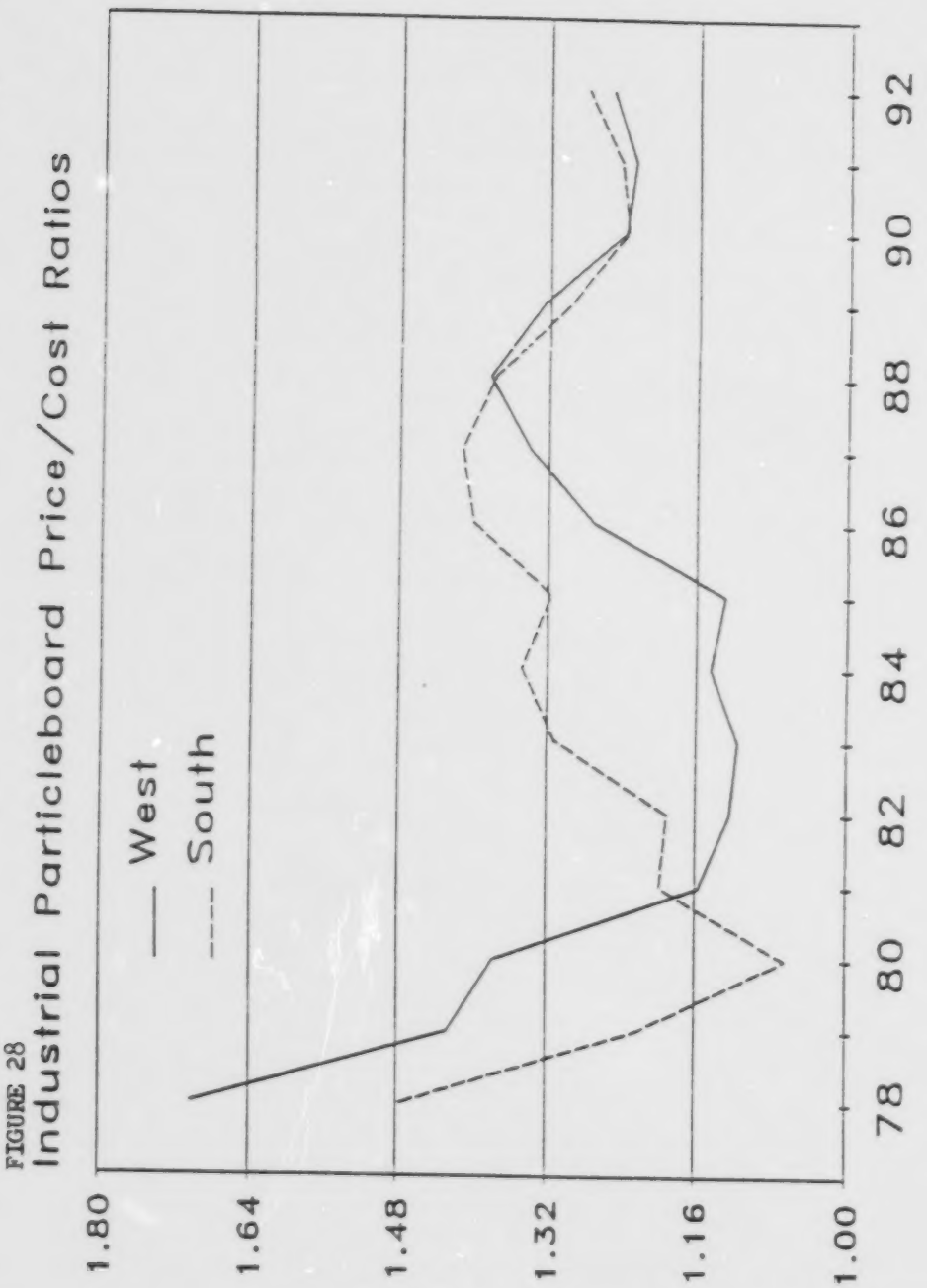
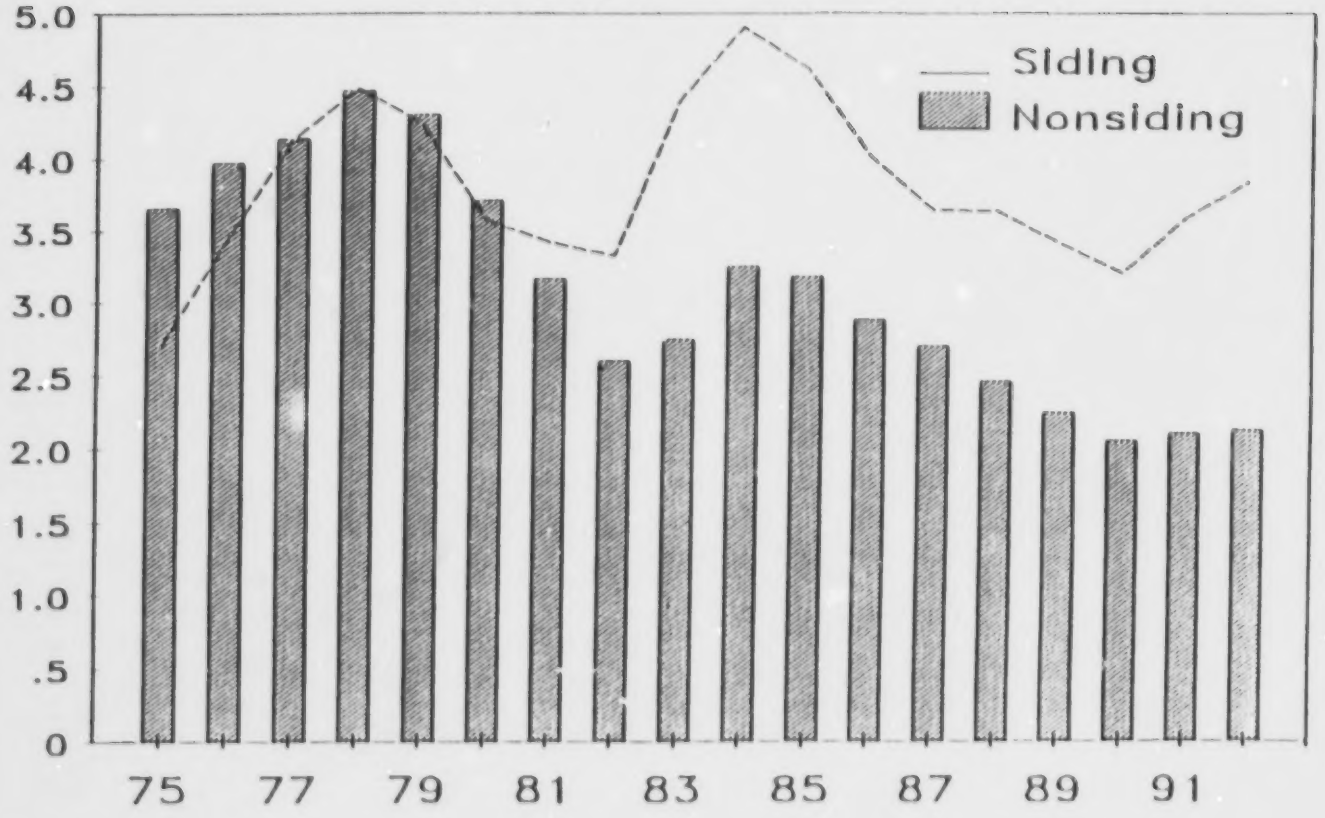

Industrial Particleboard Price/Cost Ratios
West
South
1.80
1.64
1.48
1.32
1.16
1.00
78
80
82
84
86
88
90
92

FIGURE 29

U.S. Consumption of Hardboard (BSF, 1/8-Inch)



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Timber Outlook

Keith Balter
Manager, RISI

Introduction:

This presentation discussed the future outlook of the United States' timber resource. This involved outlooks on regional demand, regional supply, timber values and opportunities & risk.

Analysis:

Regional Demand: The harvest level of U.S. coastal softwood sawtimber is predicted to gradually decline to about 12 BBF/year by the year 2000 (Figure 30). The expected decline in harvest will be due to the limiting future timber supplies. This trend is not evident for softwood sawtimber harvest in the southern United States; harvest levels are predicted to remain at around 18 BBF/year (Figure 31). However, as Figure 32 illustrates, the total harvest demand on U.S. southern forests is predicted to increase over time as the pulp industry increases its utilization of smaller logs and not sawtimber. Furthermore, the harvest demand of hardwood timber is also expected to increase overtime as the pulp industry continually increases its use of these species (Figure 33).

Regional Supply: Figure 34 shows that the softwood sawtimber inventories on private forest land are expected to decline in the South, Inland and Coastal regions of the U.S.. However, the decline is expected to be the greatest on the coast since harvest levels in this region have exceeded growth. This is further illustrated in Figure 35. Public softwood inventories in the coastal regions, on the other hand, are forecasted to increase from about 19000 MMCF in 1986 to almost 30000 MMCF by the year 2016 (Figure 36). The majority of the increase is expected to accrue from Federal forest lands.

The expected increase in public softwood inventories on the U.S. Coast is due to (1) the budget constraints announced by the Gramm-Rudman bill, and (2) environmental concerns especially with regards to wildlife and sustaining old growth.

Total softwood growing stock inventories are predicted to increase in the Northeast and North Central regions of the U.S. in the future but it is anticipated that inventories will decline in the U.S. South (Figure 37). Hardwood growing stock inventories, on the other hand, are expected to continue increasing over the 1986-2000 period for all three regions (Figure 38).

Timber Values: The real stumpage prices for Douglas fir are predicted to increase from the 1987 level of $43/MSF (million square feet) to $70/MSF by the year 2000 (Figure 39). This increase is due to the tightened timber supply in the coastal regions. The real stumpage price for southern pine is expected to increase as well but at a lower rate compared to Douglas fir prices (Figure 39). Southern pine stumpage prices are predicted to reach about $60/MSF by 2000 which is up $19/MSF from 1987. Prices for southern pine are forecasted to increase only moderately because of the drop in oil prices and the fact that timber demand has not exceeded supply by a very large margin.

FIGURE 30

Coast Softwood Sawtimber Harvest by End Use
(Billion Board Feet per Year—International, 1/4-Inch)

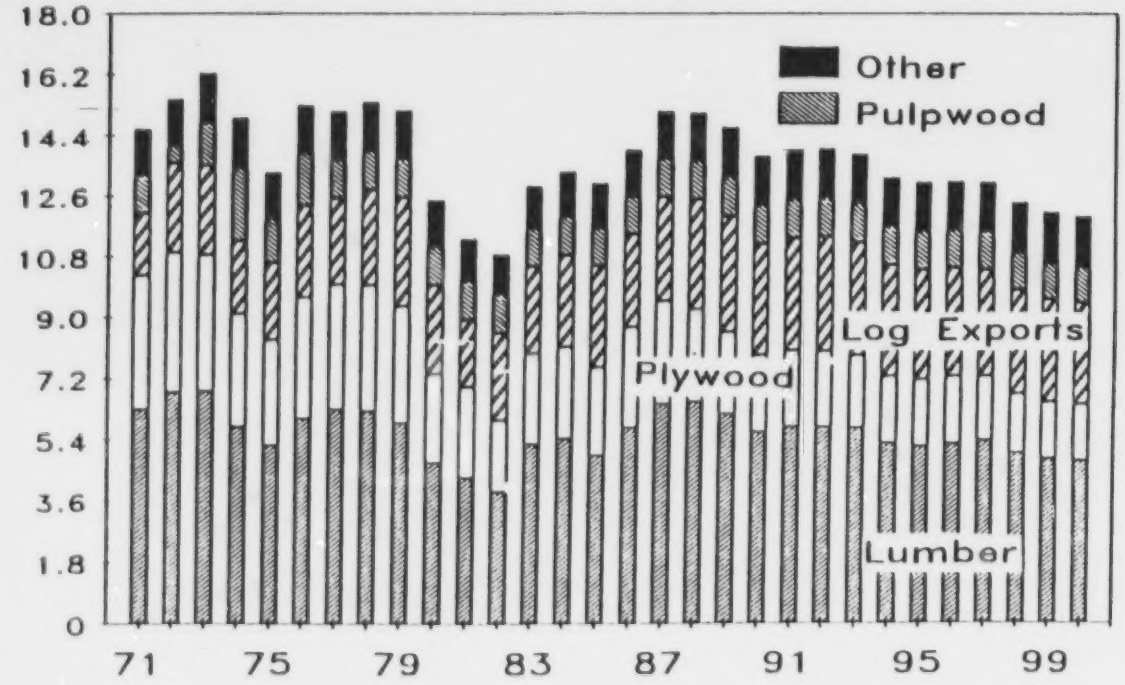

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FIGURE 31

Southern Softwood Sawtimber Harvest by End Use
(Billion Board Feet per Year—International, 1/4—Inch)

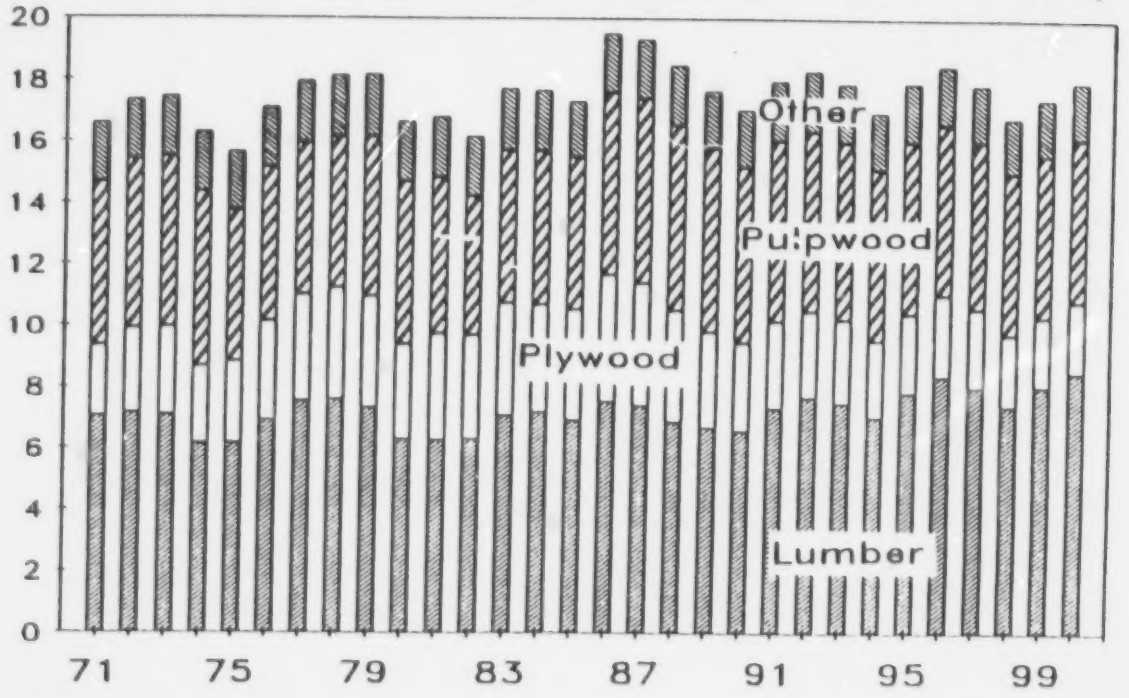

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FIGURE 32

Southern Softwood Growing Stock Harvest by End Use
(Billion Cubic Feet per Year)

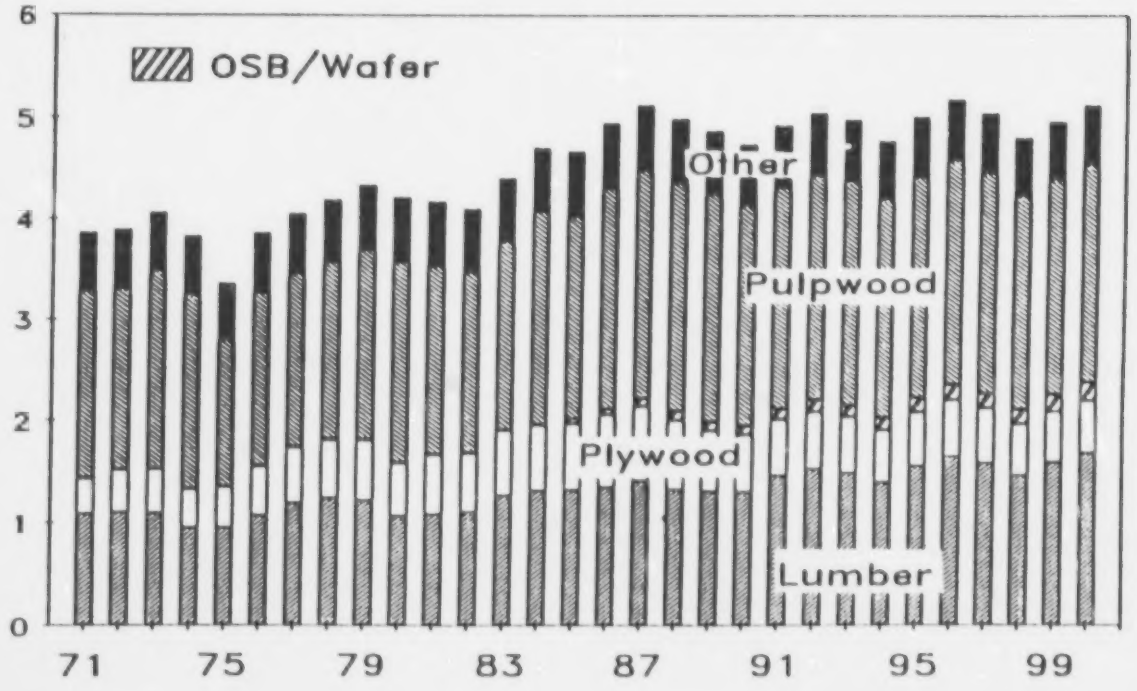

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FIGURE 33

Southern Hardwood Growing Stock Harvest by End Use
(Billion Cubic Feet per Year)

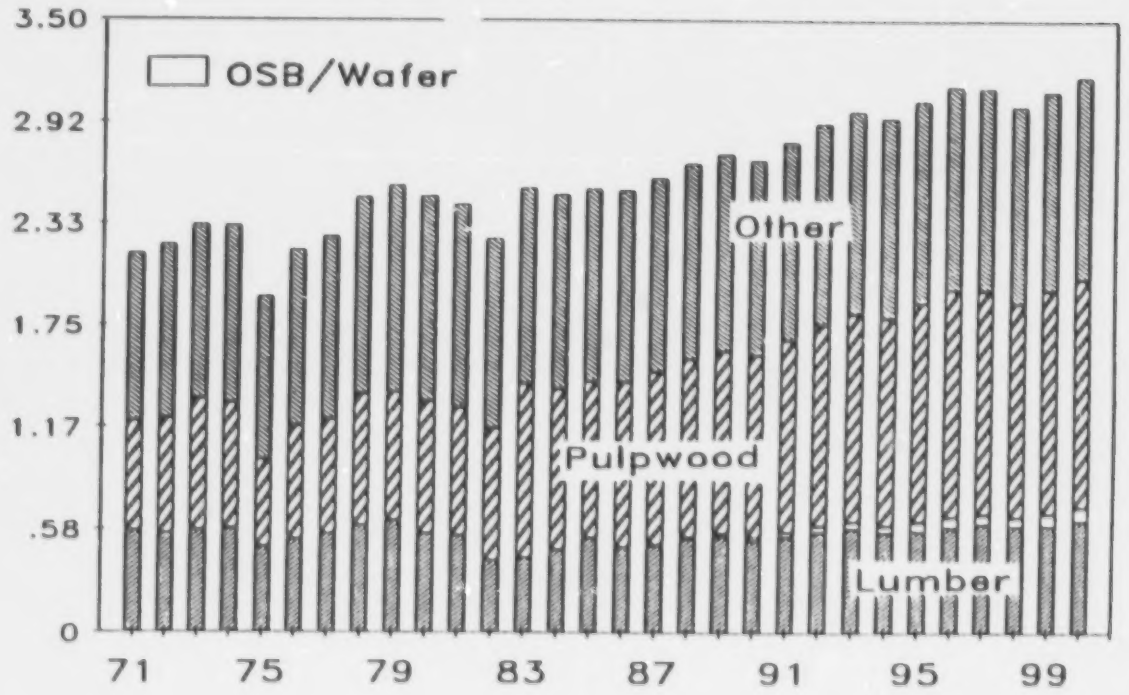

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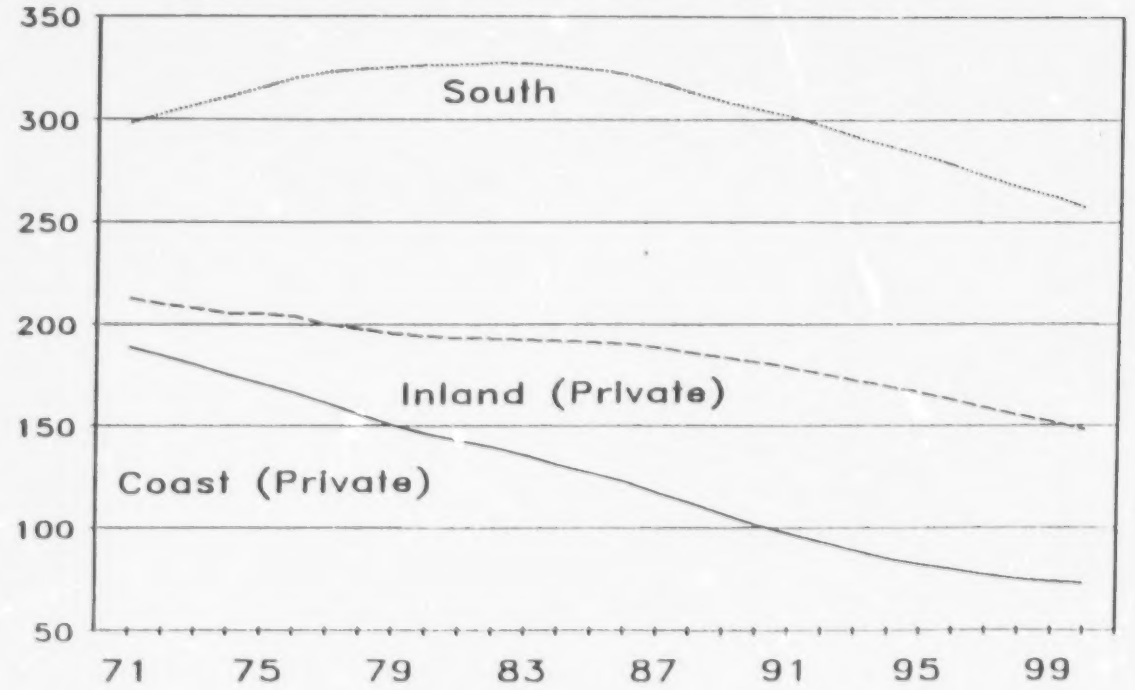
FIGURE 34

Softwood Sawtimber Inventory, 1971–2000
(Billion Board Feet--International, 1/4-Inch)



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WESTSIDE WASHINGTON AND OREGON

FIGURE 35
PRIVATE SOFTWOOD INVENTORY AGED 55 TO 100 YEARS
CONIFER ACRES ONLY
-Million Cubic Feet-

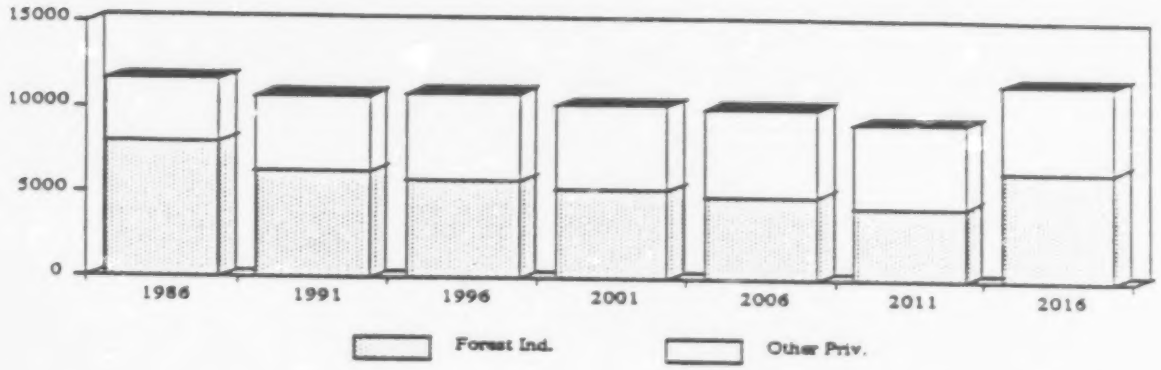

FIGURE 36
PUBLIC SOFTWOOD INVENTORY AGED 55 TO 100 YEARS
CONIFER ACRES ONLY
-Million Cubic Feet-

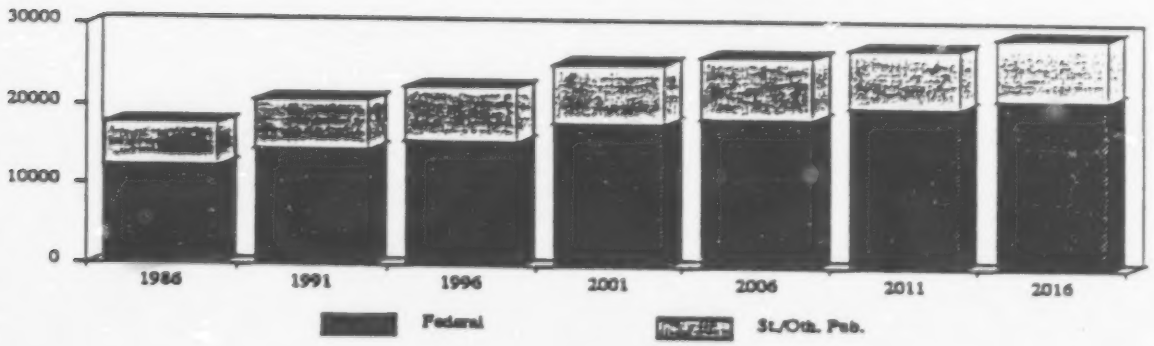

FIGURE 37

Softwood Growing Stock Inventory, 1971-2000
(Billion Cubic Feet)

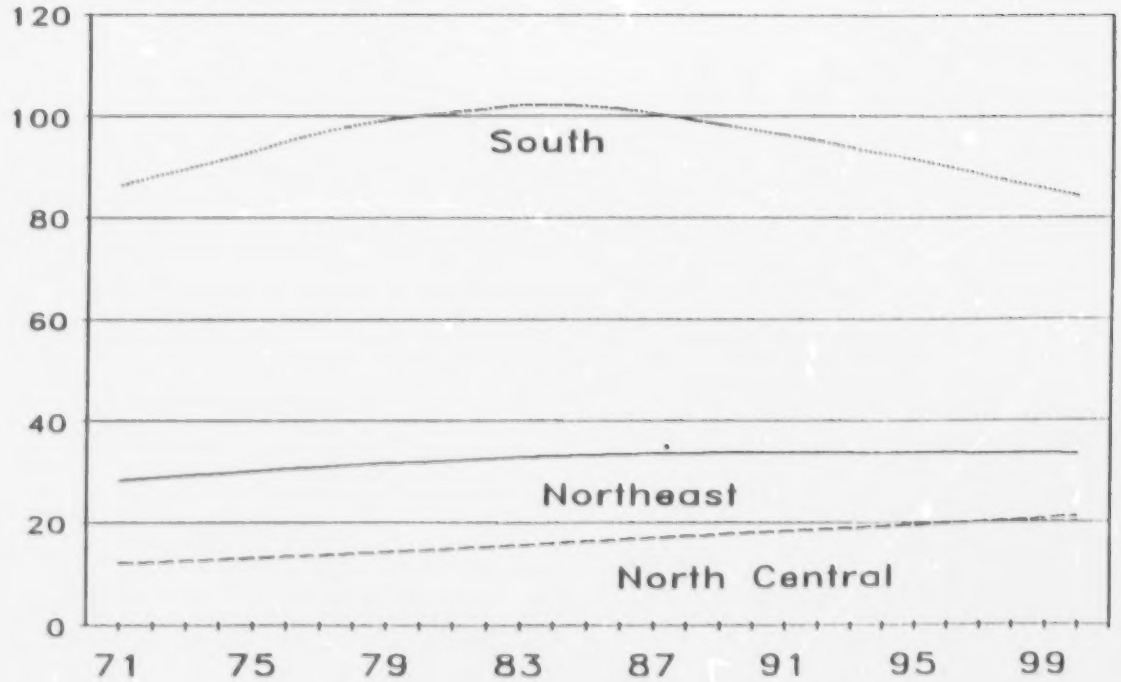

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FIGURE 38

Hardwood Growing Stock Inventory, 1971–2000
(Billion Cubic Feet)

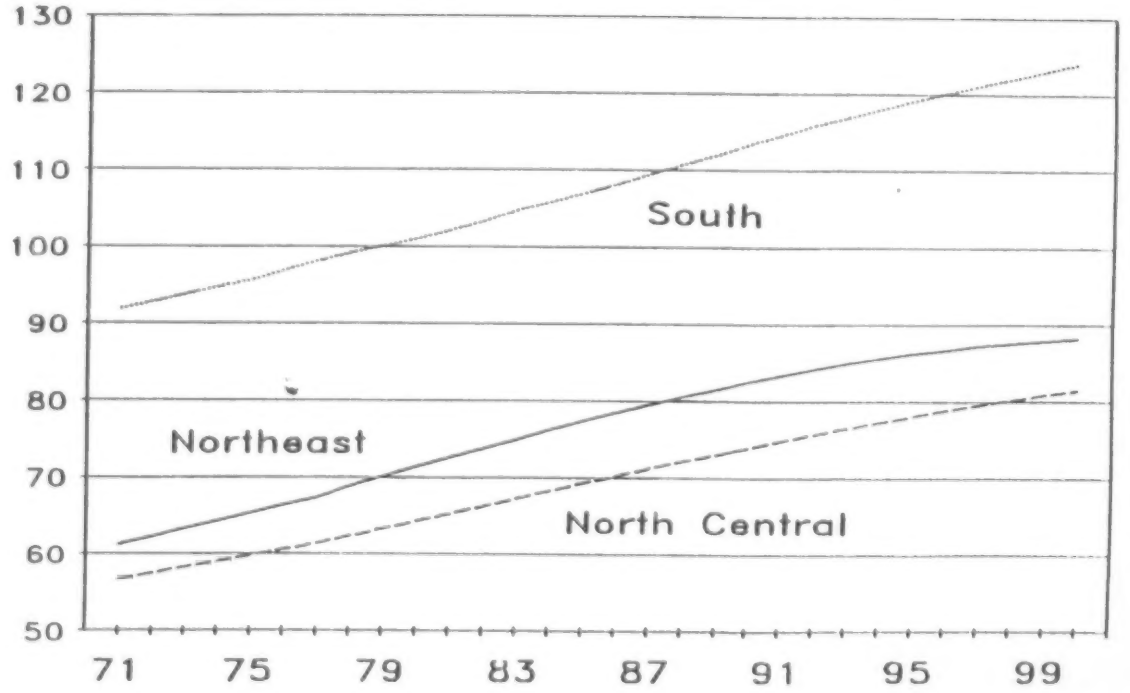

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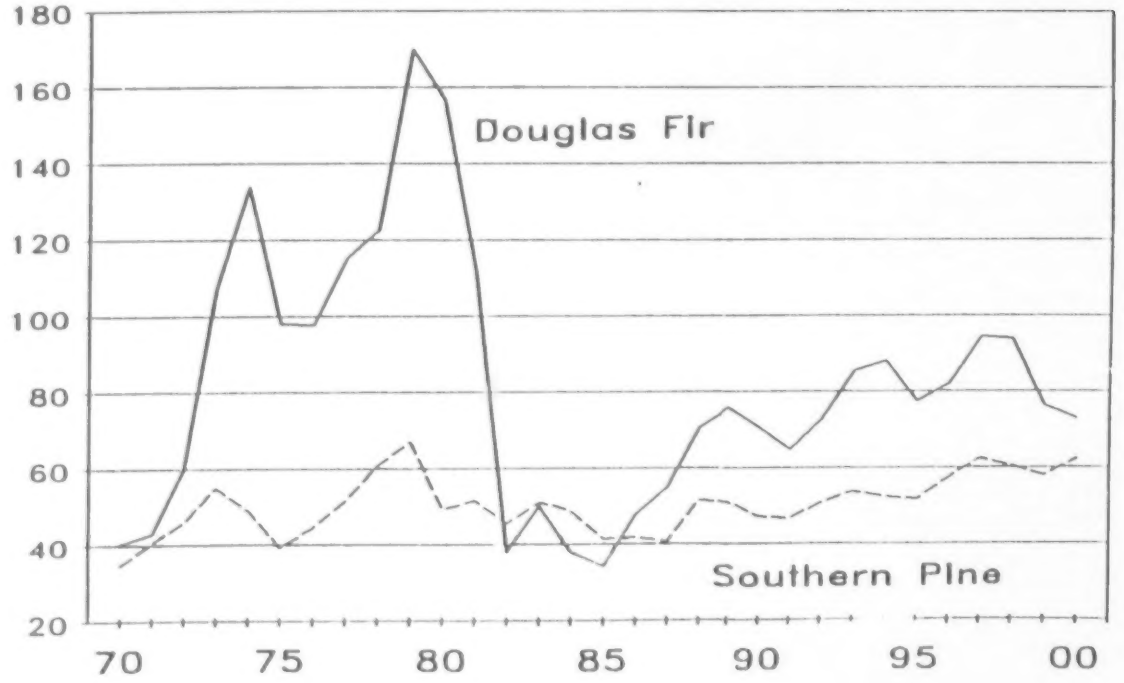
FIGURE 39

Douglas Fir & Southern Pine Stumpage Price
Adjusted for Inflation
-($67) Dollars per MBF (Scribner)-



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Opportunities and Risk: The demand and supply of timber from the U.S. could be influenced by several factors. There is a great opportunity in the coastal region of the U.S. for an increase in harvest levels on public forests if the proper policies are implemented. However, there is expected to be an increased competitiveness in supply of forest products from Chile and New Zealand. Also, with the possibility of a bilateral free trade agreement, Canada may increase their supply of products into the U.S.. Finally, a log export restriction would lower the demand for timber if it was not consumed in other areas (e.g., in new lumber and plywood mills).

Conclusions:

The supply of softwood timber is predicted to become tighter in both the U.S. Coastal and Southern regions. This will induce the real stumpage prices of both Douglas fir and Southern pine to increase. However, these prices may stabalize as product supply from Chile and New Zealand increases. Finally, it is predicted that the demand and supply of hardwood from the U.S. South, North Central and Northeast will significantly increase over the forecast periods as it becomes increasingly utilized in pulp and reconstituted wood panels.